Aircraft Service Manual

Service Schedule

Inspection Schedule

Engine Instruction & Maintenance Manual

Propeller Instruction Manual

Airworthiness Limitations

- **Mandatory Replacement Times**
- **Structural Inspection Intervals**
- **Structural Inspection Procedures**

FOREWORD

This manual contains JABIRU recommended procedures and instructions for ground handling, servicing and maintaining the following Jabiru aircraft models:

J230-C	-	LSA, Factory-Built, Jabiru 3300 powered 2 Seat
J230-C	-	LSA, Kit-Built, Jabiru 3300 powered 2 Seat

The J230-C is an LSA acceptable aircraft. In Australia the J230-C may be registered by CASA with a "VH" prefix as a Light Sport Aircraft (LSA) or by Recreational Aviation Australia (RAAus) with a "24" prefix. In both categories, the J230-C has a **600kg** MTOW.

There are two divisions within the LSA category – LSA Special and LSA Experimental. Special LSAs' are (generally) those which have been built by the factory, then maintained in accordance with the manufacturer's requirements (any modifications must also be approved by the factory). Experimental LSAs' are those built from kits **or those aircraft which have a modification which is not approved by the factory or were not maintained to the manufacturer's requirements**. As Experimental LSAs cannot be used for hire-and-reward operations, it is very important that owners maintain their aircraft in an appropriate manner for their operational requirements.

It is the owner's responsibility to become fully aware of the particular maintenance requirements and limitations applicable to the appropriate registration. The details given above are intended to give owners a broad appreciation of the rules for LSA – further details can be gained by contacting CASA, the RAA or Jabiru Aircraft.

The information in this manual is based upon data available at the time of publication, and is supplemented and kept current by Service Bulletins & Service Letters published by JABIRU AIRCRAFT Pty Ltd. These are distributed directly to owners of J230-C aircraft in addition to being posted on the JABIRU website. New owners of pre-owned aircraft should ensure that the transfer of their aircraft has been advised to JABIRU AIRCRAFT Pty Ltd or your local dealer of distributor. Existing owners should ensure that their postal address remains current.

In addition to the information in this Service Manual, publications will periodically be available from JABIRU which describe disassembly, overhaul and parts breakdown of some of the various vendor equipment items. A listing of the available publications is issued from time to time in service letters. Service Letters are also posted on the JABIRU web site and provided to JABIRU dealers.

IMPORTANT

All maintenance should be undertaken with careful regard for the procedures outlined in this manual. A detailed record of maintenance undertaken should be recorded in the Aircraft Log Books.

For both kit built and factory built aircraft owners remain able to conduct maintenance on aircraft for which they are the registered owner. If the aircraft is being used for training,

etc, maintenance is required to be done by approved persons (L2 or LAME depending on the registration).

In the interests of product development, we encourage owners to make suggestions related to design improvements. However, the final decision on their adoption or otherwise rests with JABIRU AIRCRAFT Pty Ltd.

1 Table of Contents

1 TABLE OF CONTENTS 4

1.1 TABLE OF FIGURES 11
1.2 LIST OF TABLES 12

2 SECTION 2 – SERVICE MANUAL 13

2.1 LIST OF EFFECTIVE PAGES 13
2.2 GENERAL DESCRIPTION 14
2.3 OWNER MAINTENANCE 14
2.3.1 J230-C 14
2.4 AIRCRAFT SPECIFICATIONS 14
2.5 CENTRE OF GRAVITY LIMITATIONS 14
2.6 TORQUE VALUES 15
2.7 AIRCRAFT SPECIFICATIONS 15
2.8 RECOMMENDED TORQUE VALUES (IN FIBREGLASS) 17
2.9 AIRCRAFT STRUCTURE 17

3 SECTION 3 - GROUND HANDLING, SERVICING, LUBRICATION & INSPECTION 18

3.1 GROUND HANDLING 18
3.1.1 Towing 18
3.1.2 Jacking 18
3.1.3 Hoisting 19
3.1.4 Levelling 20
3.1.5 Parking 20
3.1.6 Tie Down 20
3.1.7 Flyable Storage 20
3.1.8 Returning Aircraft to Service 21
3.1.9 Temporary or Indefinite Storage 21
3.1.10 Inspection During Storage 22
3.1.11 Returning Aircraft to Service 22
3.2 WEIGHING 23
3.2.1 Scale locations 23
3.2.2 Procedure 23
3.3 SERVICING 24
3.3.1 Engine Servicing Schedule 24
3.3.2 other Servicing 25
3.3.3 Fuel 25
3.3.4 Fuel Drain 25
3.3.5 Carburettor Air Filter 25
3.3.6 Battery 25
3.3.7 Tyres 25
3.3.8 Hydraulic Brakes 25
3.4 CLEANING 26
3.4.1 Windshield and Windows 26
3.4.2 Interior Surfaces 26
3.4.3 Exterior Surfaces 26
3.4.4 Aluminium Surfaces 27
3.4.5 Engine and Engine Compartment 27
3.4.6 Propeller 27
3.4.7 Wheels 27
3.5 LUBRICATION 27
3.5.1 Wheel Bearing – Mains and Nose 27
3.6 INSPECTION 28
3.6.1 Inspection Intervals 28
3.6.2 Inspection Charts 28
3.6.3 INSPECTION GUIDELINES 28

3.7 MAJOR INSPECTION / REPLACEMENT 32
3.7.1 MANDATORY INSPECTION 32
3.7.2 INSPECTION CHART 33

4 SECTION 4 - FUSELAGE 37

4.1 FUSELAGE 37
4.2 WINDSHIELD AND WINDOWS 37
4.2.1 Description 37
4.2.2 Cleaning 37
4.2.3 Waxing 37
4.2.4 Repairs 37
4.2.5 Scratches 37
4.2.6 Cracks 38
4.2.7 Removal 38
4.2.8 Installation 38
4.3 CABIN DOORS 38
4.3.1 Removal and Installation 38
4.3.2 Adjustment 41
4.3.3 Door Seals 41
4.3.4 Locks 43
4.4 SEATS 43
4.4.1 Repair 43
4.5 UPHOLSTERY 43
4.5.1 UPHOLSTERY CLEANING – FLAME RETARDANT 43
4.6 SOUNDPROOFING 43
4.7 SAFETY PROVISIONS 43
4.7.1 Seatbelts 43

5 SECTION 5 – WINGS AND EMPENNAGE 44

5.1 WINGS 44
5.1.1 Removal 44
5.1.2 Repair 45
5.1.3 Installation 45
5.2 WING STRUTS 49
5.2.1 Removal and Installation 49
5.2.2 REPAIR 49
5.3 PITOT PROBE 49
5.3.1 Description 49
5.3.2 PITOT Removal & Installation 49
5.4 LANDING LIGHT (OPTION) 50
5.4.1 Description 50
5.4.2 LANDING LIGHT Removal & Installation 50
5.5 FIN 51
5.5.1 Removal, Installation, Inspection and Repair 51
5.6 HORIZONTAL STABILISER 51
5.6.1 Removal and Installation 51

6 SECTION 6 – LANDING GEAR AND BRAKES 52

6.1 LANDING GEAR 52
6.2 TROUBLE SHOOTING – MAIN UNDERCARRIAGE 52
6.3 MAIN GEAR 52
6.3.1 Removal 53
6.3.2 Installation 53
6.3.3 Inspection and Repair 53
6.3.4 Main Wheel Fairing Removal and Installation 54
6.3.5 Main Gear Top Fairing Removal and Installation 54
6.4 MAIN WHEEL 56
6.4.1 Main Wheel Removal 56
6.4.2 Main Wheel Disassembly 56

6.4.3 Main Wheel Inspection, Assembly and Repair....56
6.4.4 Main Wheel Installation....57
6.4.5 Main Wheel Stub Axle Removal....57
6.4.6 Main Wheel Stub Axle Installation....58
6.4.7 Main Wheel Alignment....58
6.4.8 Wheel Balancing....58
6.5 NOSE GEAR....63
6.5.1 Trouble Shooting – Nose Leg....63
6.5.2 Nose Gear Removal and Installation....63
6.5.3 Nose Gear Inspection and Repair....64
6.5.4 Nose Wheel Speed Fairing Removal and Installation....64
6.6 NOSE WHEEL....64
6.6.1 Nose Wheel Removal and Installation....64
6.6.2 Nose Wheel Disassembly....64
6.6.3 Nose Wheel Inspection and Repair....65
6.6.4 Nose Wheel Reassembly....65
6.6.5 Wheel Balancing....65
6.7 NOSE WHEEL STEERING SYSTEM....68
6.7.1 5.7.1 Steering Centring Assembly....68
6.7.2 Nose Wheel Steering Assembly....68
6.8 BRAKE SYSTEM....68
6.8.1 Trouble Shooting - Brakes....68
6.8.2 Brake Master Cylinder....69
6.8.3 Hydraulic Brake Lines....69
6.8.4 Wheel Brake Assemblies....69
6.8.5 Brake System Bleeding....71
6.8.6 Brake Pad Adjustment....71
6.8.7 Parking Brake....72

7 SECTION 7 - AILERON CONTROL SYSTEM....75

7.1 AILERON CONTROL SYSTEM....75
7.2 CONTROL COLUMN....77
7.2.1 Control Column Removal....77
7.2.2 Control column inspection & repair....77
7.2.3 Control Column Installation....77
7.3 CONTROL CABLES....79
7.3.1 Control Cable Removal....79
7.3.2 Control Cable Inspection & Repair....79
7.3.3 Control Cable Installation....79
7.4 AILERONS....79
7.4.1 Aileron Removal & Installation....79
7.4.2 Aileron Inspection & Repair....79
7.4.3 AILERON BALANCING....80
7.5 CONTROL RIGGING....80

8 SECTION 8 - WING FLAP CONTROL SYSTEM....82

8.1 WING FLAP CONTROL SYSTEM....82
8.1.1 OPERATIONAL CHECK....82
8.1.2 FLAP Switch ASSEMBLY....82
8.1.3 FLAP cross SHAFT ASSEMBLY....82
8.1.4 Flap Cross Shaft Removal....82
8.1.5 Flap cross shaft inspection & repair....82
8.1.6 flap cross shaft Installation....82
8.1.7 Flap Position Indicator Removal....83
8.1.8 flap position indicator inspection & repair....83
8.1.9 Flap Position indicator installation....83
8.1.10 Flap Control Rod....83
8.2 FLAP....83
8.2.1 Removal and Installation....83

8.2.2 Inspection and Repair 83
8.2.3 flap balancing 83
8.2.4 flap RIGGING (as per template) 83

9 SECTION 9 – ELEVATOR CONTROL SYSTEM 90

9.1 ELEVATOR CONTROL SYSTEM 90
9.2 CONTROL COLUMN DESCRIPTION 90
9.2.1 Removal and Installation 90
9.3 ELEVATOR 90
9.3.1 Removal and Installation 90
9.3.2 ELEVATOR BALANCING 90
9.3.3 Inspection and Repair 91
9.4 CONTROL CABLE AND ATTACHMENTS 91
9.4.1 Removal and Installation 91
9.5 RIGGING 91
9.6 ELEVATOR TRIM CONTROL SYSTEM 97
9.6.1 Operational Check 97
9.6.2 Trim Handle Assembly 97
9.6.3 Control Cable and Attachments 97
9.6.4 Removal and Installation 97
9.6.5 Inspection and Repair 97

10 SECTION 10 – RUDDER CONTROL SYSTEM 100

10.1 RUDDER PEDAL SYSTEM 100
10.1.1 Removal and Installation 100
10.1.2 Inspection and Repair 100
10.2 RUDDER 102
10.2.1 Removal & Installation 102
10.2.2 Inspection & Repair 102
10.3 CONTROL CABLE & ATTACHMENTS 102
10.3.1 Removal & Installation 102
10.4 RUDDER BALANCE 102
10.5 RIGGING 103

11 SECTION 11 – ENGINE & ENGINE INSTALLATION 106

11.1 ENGINE COWLS 106
11.1.1 Engine Cowls – Removal & Installation 106
11.1.2 Cleaning and Inspection 109
11.1.3 Repair 109
11.2 ENGINE 109
11.2.1 Engine Data 109
11.2.2 Engine Trouble Shooting 109
11.2.3 Engine Cleaning 109
11.2.4 Engine Accessories Removal 109
11.2.5 Inspection 110
11.3 COOLING AIR BAFFLES 111
11.3.1 Cleaning and Inspection 111
11.3.2 Cooling Air Baffle Removal & Installation 111
11.3.3 Repair 111
11.4 ENGINE MOUNT 111
11.5 ENGINE FUEL SYSTEM 111
11.5.1 Fuel System General 111
11.5.2 LSA Aircraft Fuel System 112
11.6 SPARK PLUGS 112
11.7 ENGINE CONTROLS 112
11.7.1 Rigging 112
11.7.2 Throttle System 112
11.7.3 Choke 114
11.7.4 Air Intake System & Carburetor Heat 114

11.8 EXHAUST SYSTEM 116
11.8.1 Exhaust System Removal and Installation 116
11.8.2 Exhaust Inspection 116
11.9 EXTREME CLIMATIC CONDITIONS 118
11.9.1 Dust 118
11.9.2 Seacoast and Humid Area 118

12 SECTION 12 – FUEL SYSTEM 120

12.1 DESCRIPTION 120
12.1.1 LSA Aircraft Fuel System 120
12.1.2 Precautions 120
12.1.3 Fuel System Trouble Shooting 122
12.2 FUEL TANK 122
12.2.1 Description 122
12.2.2 Fuel Tank Removal & Installation 122
12.3 FUEL VENTS 123
12.3.1 Description 123
12.3.2 Checking 123
12.4 FUEL SHUT-OFF VALVE 126
12.4.1 Description 126
12.4.2 Fuel Valve Removal & Installation 126
12.5 FUEL GAUGES 127
12.5.1 Description – SIGHT GLASSES 127
12.5.2 Fuel SIGHT GAUGE Removal & Installation 127
12.5.3 ELECTRIC FUEL GAUGE TROUBLESHOOTING 128
12.5.4 ELECTRIC Fuel GAUGE SENDER Removal & Installation 128
12.6 HEADER TANK LOW LEVEL WARNING (OPTION) 130
12.6.1 Description 130
12.6.2 Fuel Valve Removal & Installation 130
12.7 FUEL FILTERS 130
12.7.1 Fuel filter 130
12.7.2 Fuel Filter Removal & Installation 131
12.8 FUEL PUMPS 131
12.8.1 Primary Pump 131
12.8.2 Secondary Pump 131

13 SECTION 13 – INSTRUMENTS & INSTRUMENT SYSTEMS 132

13.1 GENERAL 132
13.2 INSTRUMENT PANEL 132
13.2.1 Instrument Panel Removal & Installation 132
13.2.2 INSTRUMENTS 133
13.2.3 Instrument Removal 134
13.2.4 Installation 134
13.3 PITOT & STATIC SYSTEMS 134
13.3.1 Pitot – Static System Maintenance 135
13.3.2 Static Pressure System Inspection & Leakage Test 135
13.3.3 Pitot System Inspection & Leakage Test 136
13.3.4 Blowing Out Lines 136
13.3.5 Removal & Installation of Components 137
13.3.6 Trouble Shooting – Pitot Static System 137
13.3.7 Trouble Shooting – Airspeed Indicator 138
13.3.8 Trouble Shooting – Altimeter 138
13.3.9 Trouble Shooting – Vertical Speed Indicator (Option) 139
13.3.10 Pitot Tube Alignment 139
13.4 TACHOMETER 143
13.5 OIL PRESSURE GAUGE 144
13.6 OIL TEMPERATURE GAUGE 144
13.7 CYLINDER HEAD TEMPERATURE GAUGE 145
13.8 EXHAUST GAS TEMPERATURE GAUGE (OPTION) 145

13.9 HOURMETER....145
13.10 MAGNETIC COMPASS....145
13.11 EFIS (WHERE EQUIPPED)....146
13.12 EMS (WHERE EQUIPPED)....146

14 SECTION 14 – ELECTRICAL SYSTEMS....147

14.1 ELECTRICAL POWER SUPPLY SYSTEM....147
14.2 WIRING DIAGRAM....147
14.3 BUS BARS....150
14.3.1 Master Switch....150
14.4 BATTERY POWER SYSTEM....150
14.4.1 Battery....150
14.4.2 Battery Trouble Shooting....150
14.4.3 Removal and Installation....150
14.4.4 Cleaning the Battery....150
14.4.5 BATTERY BOX....151
14.5 STARTER SOLENOID....151
14.6 VOLTAGE REGULATOR....151
14.7 STROBE SYSTEM (OPTION)....151
14.8 AUXILIARY POWER SOCKET....151
14.9 ELECTRICAL LOAD ANALYSIS (ELA)....151
14.10 RADIO WIRING DIAGRAM (OPTION)....151
14.10.1 VHF ANTENNA INSTALLATION....151

15 SECTION 15 – PAINTING & FINISHING....153

15.1 EXTERIOR....153
15.1.1 Painting....153
15.1.2 Materials Recommended....153
15.1.3 Painting Equipment Required....153
15.1.4 Painting Procedure:....153

16 SECTION 16 - PLACARDS....156

16.1 J230-C DECALS....156
16.2 COCKPIT PLACARDS GENERAL....158
16.3 COCKPIT CONTROL DECALS....158
16.4 EXTERNAL FUSELAGE....159

17 SECTION 17 - FAIRINGS....160

17.1 WHEEL SPATS....160
17.2 WING FAIRINGS....160
17.2.1 Removal and Installation....160
17.3 REPAIR....160

18 APPENDIX I - JABIRU 3300 ENGINE....161

19 APPENDIX II - JABIRU ENGINE PARTS BOOK....162

20 APPENDIX III – ENGINE INSTALLATION MANUAL....163

21 APPENDIX IV – PROPELLER SERVICE MANUAL....164

21.1 APPROVED INSTALLATIONS....164
21.2 IDENTIFICATION STAMPINGS....164
21.3 DESCRIPTION....164
21.4 INSTALLATION....165
21.5 TO REMOVE EXISTING PROPELLER....167
21.6 TO ASSEMBLE AND REPLACE PROPELLER ASSEMBLY....167
21.7 SERVICING AND REPAIRS....168
21.8 PROPELLER BALANCING PROCEDURE....169

22 APPENDIX V – AIRWORTHINESS LIMITATIONS....170

22.1 GENERAL....170
22.2 INTERIOR FLAME RETARDANT MAINTENANCE LIMITATIONS....170
22.3 COMPOSITE INSPECTION & MAINTENANCE....170
22.3.1 External Paint / Finishing Limitations....170
22.4 CONTROL SURFACE BALANCING....170
22.4.2 mandatory Replacement....171

1.1 TABLE OF FIGURES

Figure 1. J230-C General Arrangement 16
Figure 2: Weighing Diagram. 24
Figure 3. Fuel Line Routing 30
Figure 3. Undercarriage 32
Figure 4. Front Door Assembly 39
Figure 5: Rear Door Assembly 40
Figure 6. Door Latch Mechanism Assembly 42
Figure 7. J230 Wing Assembly Sheet 1 47
Figure 8. J230 Wing Assembly Sheet 2 48
Figure 9 – Dynon Pitot Probe Installation 50
Figure 10 – Landing Light Assembly 51
Figure 11. Main Undercarriage Assembly 55
Figure 12. Main Wheel Alignment 59
Figure 13. Main Wheel to Leg Assy 60
Figure 14. Main Wheel Assembly 61
Figure 15. Directional Brake Disc Installation 62
Figure 16. Nose Leg Assy 66
Figure 17. Nose Wheel Hub Assembly 67
Figure 18. Brake Calliper Assy 73
Figure 19. Brake Master Cylinder Assy 74
Figure 20. Aileron System Schematic 76
Figure 21. Control Column Assy 78
Figure 22. Aileron Stops 81
Figure 23. Flap Controls – Sheet 1 85
Figure 24. Flap Controls – Sheet 2 86
Figure 25. Flap Cross Tube Assy 87
Figure 26. Flap Position Indicator 88
Figure 27. Flap Position Indicator Drive Cable Assembly 89
Figure 28. Elevator Control Assy 92
Figure 29: Elevator Control Assy Rear. 93
Figure 30. J230 Models - Horizontal Tail & Elevator Assy 94
Figure 31. J170 Models - Horizontal Tail & Elevator Assy 95
Figure 32. Elevator Travel Limits 96
Figure 33. Elevator Trim Handle Assy 98
Figure 34. Trim Controls – At Tail 99
Figure 35. Rudder Pedal Assy 101
Figure 36. Rudder System Schematic 104
Figure 37. Rudder Installation 105
Figure 38. Upper Cowl Assy 107
Figure 39. Lower Cowl Assy 108
Figure 40. LSA Variant Throttle (Panel Mounted) 113
Figure 41 – Instrument Panel & Throttle Assembly 114
Figure 42. Carburetor Heat Box 115
Figure 43. Exhaust System 117
Figure 44. Engine Installation 119
Figure 45. Fuel System Schematic – LSA Variants 121
Figure 46. Vented Fuel Cap Assy 125
Figure 47. Single Line Fuel Tap 127
Figure 48. Fuel Gauge – Electric Sender Installation 128
Figure 49. Fuel Gauge – Electric Sender Assembly 129
Figure 50. Fuel Gauge – Sight Glass 129
Figure 51. Header Tank Low Level Sensor Installation 130
Figure 52. Instrument Panel Layout (Std Panel) 133
Figure 53. Instrument Panel Layout – “Glass” Instrument Panel 134
Figure 54. Pitot-Statice System – Water Trap Locations 140
Figure 55. Pitot Assembly – Std Pitot 141
Figure 56. Static Probe System Assembly 142
Figure 57. Static System Test 143

Figure 58. Wiring Diagram Sheet 1. 148
Figure 59. Wiring Diagram Sheet 2. 149
Figure 60. VHF Antenna Installation 152
Figure 61. Propeller Installation 166

1.2 LIST OF TABLES

Table 1. J230 Specifications 15
Table 2. Recommended Bolt Torque Values 17
Table 3. Control Free Play Limits 29
Table 4. Inspection Chart 33
Table 5. Trouble Shooting – Main Undercarriage 52
Table 6. Trouble Shooting – Nose Leg. 63
Table 7. Trouble Shooting – Brakes 68
Table 8. Trouble Shooting – Fuel System 122
Table 9. Trouble Shooting – Fuel Gauge 128
Table 10. Trouble Shooting – Pitot-Static System 137
Table 11. Trouble Shooting – Airspeed Indicator 138
Table 12. Trouble Shooting – Altimeter 138
Table 13. Trouble Shooting – Vertical Speed Indicator (Option) 139
Table 14. J230-C Decals 156
Table 15. General Cockpit Decals 158
Table 16. Cockpit Control Decals 158
Table 17. External Fuselage Decals 159
Table 18. Approved Propeller Installations 164
Table 19. Control Surface Balancing Limits 171
Table 20. Mandatory Inspection Times 171
Table 21. Mandatory Replacement Times 171

2 Section 2 – Service Manual

2.1 LIST OF EFFECTIVE PAGES

Page	Revision	Date	Page	Revision	Date	Page	Revision	Date
1	1	16/5/06	61	1	16/5/06	121	1	16/5/06
2	1	16/5/06	62	1	16/5/06	122	1	16/5/06
3	1	16/5/06	63	1	16/5/06	123	1	16/5/06
4	1	16/5/06	64	1	16/5/06	124	1	16/5/06
5	1	16/5/06	65	1	16/5/06	125	1	16/5/06
6	1	16/5/06	66	1	16/5/06	126	1	16/5/06
7	1	16/5/06	67	1	16/5/06	127	1	16/5/06
8	1	16/5/06	68	1	16/5/06	128	1	16/5/06
9	1	16/5/06	69	1	16/5/06	129	1	16/5/06
10	1	16/5/06	70	1	16/5/06	130	1	16/5/06
11	1	16/5/06	71	1	16/5/06	131	1	16/5/06
12	1	16/5/06	72	1	16/5/06	132	1	16/5/06
13	1	16/5/06	73	1	16/5/06	133	1	16/5/06
14	1	16/5/06	74	1	16/5/06	134	1	16/5/06
15	1	16/5/06	75	1	16/5/06	135	1	16/5/06
16	1	16/5/06	76	1	16/5/06	136	1	16/5/06
17	1	16/5/06	77	1	16/5/06	137	1	16/5/06
18	1	16/5/06	78	1	16/5/06	138	1	16/5/06
19	1	16/5/06	79	1	16/5/06	139	1	16/5/06
20	1	16/5/06	80	1	16/5/06	140	1	16/5/06
21	1	16/5/06	81	1	16/5/06	141	1	16/5/06
22	1	16/5/06	82	1	16/5/06	142	1	16/5/06
23	1	16/5/06	83	1	16/5/06	143	1	16/5/06
24	1	16/5/06	84	1	16/5/06	144	1	16/5/06
25	1	16/5/06	85	1	16/5/06	145	1	16/5/06
26	1	16/5/06	86	1	16/5/06	146	1	16/5/06
27	1	16/5/06	87	1	16/5/06	147	1	16/5/06
28	1	16/5/06	88	1	16/5/06	148	1	16/5/06
29	1	16/5/06	89	1	16/5/06	149	1	16/5/06
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31	1	16/5/06	91	1	16/5/06	151	1	16/5/06
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40	1	16/5/06	100	1	16/5/06	160	1	16/5/06
41	1	16/5/06	101	1	16/5/06	161	1	16/5/06
42	1	16/5/06	102	1	16/5/06	162	1	16/5/06
43	1	16/5/06	103	1	16/5/06	163	1	16/5/06
44	1	16/5/06	104	1	16/5/06	164	1	16/5/06
45	1	16/5/06	105	1	16/5/06	165	1	16/5/06
46	1	16/5/06	106	1	16/5/06	166	1	16/5/06
47	1	16/5/06	107	1	16/5/06	167	1	16/5/06
48	1	16/5/06	108	1	16/5/06	168	1	16/5/06
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56	1	16/5/06	116	1	16/5/06	176	1	16/5/06
57	1	16/5/06	117	1	16/5/06	177	1	16/5/06
58	1	16/5/06	118	1	16/5/06	178	1	16/5/06
59	1	16/5/06	119	1	16/5/06	179	1	16/5/06
60	1	16/5/06	120	1	16/5/06			

Revision Notes

2.2 GENERAL DESCRIPTION

The JABIRU J230-C is a 2 seat, high-wing monoplane composite aircraft of monocoque construction. It is equipped with fixed tricycle landing gear of composite construction. The steerable nose gear is a welded metal, trailing link assembly with rubber springs.

The aircraft is equipped with JABIRU, 6 cylinder, 4 stroke engines driving a wooden fixed pitch propeller.

2.3 OWNER MAINTENANCE

2.3.1 J230-C

The J230-C has been specifically designed as a simple aircraft which can be maintained by owners to a large degree. Jabiru Aircraft allows normal maintenance up to 100-hourly servicing to be carried out by the owner. This includes:

- Oil & oil filter changes
- Fuel filter changes
- Brake pad changes
- Tyre changes
- Spark plug changes
- Normal engine maintenance between 100-hourly maintenance (ie 33 and 66 hour maintenance). Refer to Engine Maintenance Manual for details.

Every 100 hours or Annually (whichever happens first) a 100-hour inspection must be inspected by an Authorised Person (such as a LAME. Refer to the RAAus Operations Manual for RAAus aircraft Australia).

Jabiru Aircraft recommend that any aircraft being used for flight training or any other form of hire-and-reward operation be maintained by an authorised maintenance person or organisation.

2.4 AIRCRAFT SPECIFICATIONS

Leading particulars of this aircraft, with dimensions based on gross weight, are given in Figure 1. If these dimensions are used for constructing a hangar or computing clearances, remember that such factors as tyre pressure, tyre size and load distribution may result in some dimensions that may be somewhat different from those listed.

2.5 CENTRE OF GRAVITY LIMITATIONS

The JABIRU is a very light aircraft. The installation of equipment may significantly alter the approved CG limits of the aircraft. Therefore, all proposed fixed installations must be approved by JABIRU AIRCRAFT Pty Ltd or an person authorized to revise an aircraft's weight and balance information (such as the holder of a CASA Weight Control Authority)

2.6 TORQUE VALUES

A chart of recommended torque values is shown in Figure 1-2. These torque values are recommended for all service procedures contained in this manual, except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

2.7 AIRCRAFT SPECIFICATIONS

Table 1. J230 Specifications

Model	J230-C
Aircraft Maximum Weight	600kg (1320lb)
Fuel Capacity	135 litres
Fuel Type	AVGAS 100/130. MOGAS with Octane Rating 95 RON (AKI 90) or above may be used if AVGAS is not available. Fuels Containing Alcohols (Ethanol etc) will damage the fuel tank sealant and **MUST NOT BE USED IN JABIRU AIRCRAFT**
Oil Capacity	3.5 litres
Oil Type	Refer Engine Manuals
Engine Model (Refer To Appendix I For Engine Data)	Jabiru 3300
Propeller Type	Jabiru 2-bladed Wooden
Propeller Diameter	60” dia (1524mm)
Propeller Pitch	Jabiru 53” pitch (1346mm)
Wheel Sizes Standard	500 x 6” rim
Tyres Standard	6” wide, 6 Ply
Tyre Pressures Standard - Mains	228 kpa (45 psi)
Tyre Pressures Standard - Nose	193 kpa (30 psi)
Wheel Alignment (At Gross Weight) Camber Toe In	 0” 0”
Battery Location	In Engine Compartment

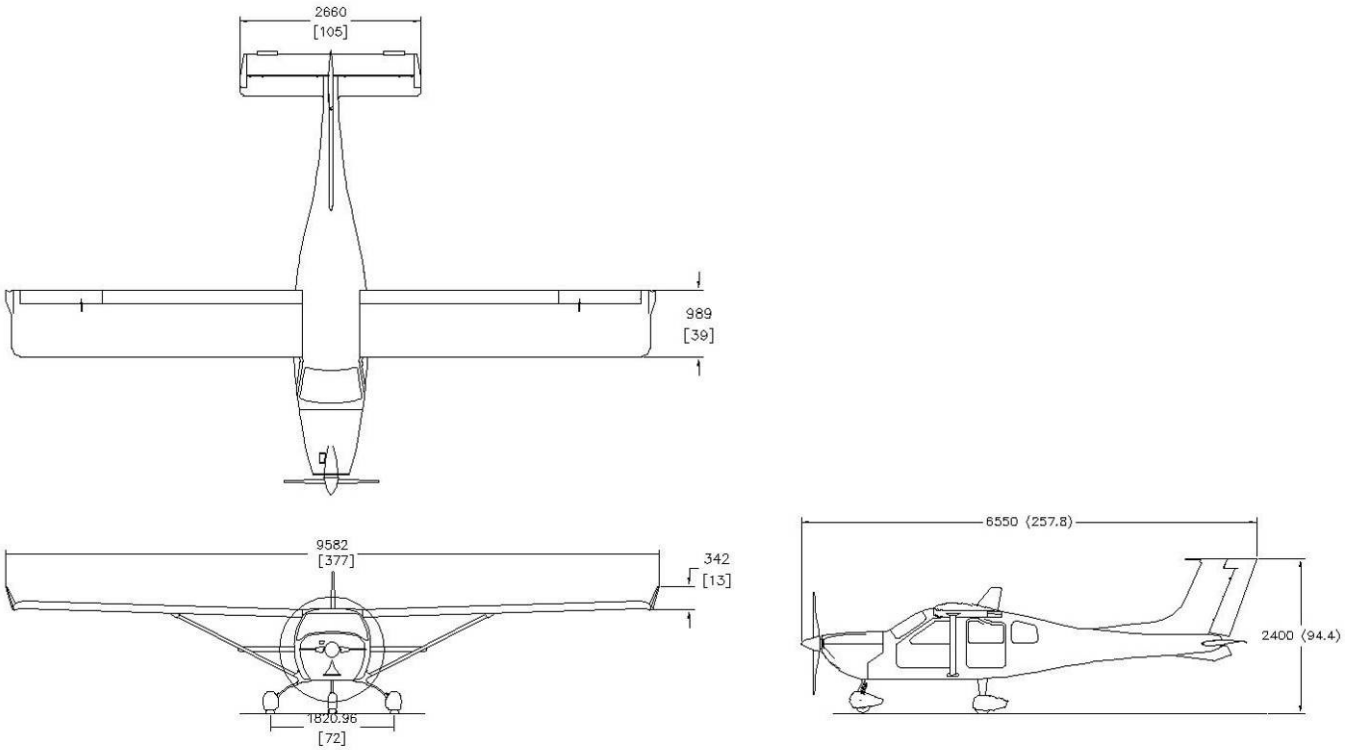


Figure 1. J230-C General Arrangement

2.8 RECOMMENDED TORQUE VALUES (IN FIBREGLASS)

Table 2. Recommended Bolt Torque Values

Bolt Size	Torque (Inch.lb)
AN3	20 - 25 (2 ft lb)
AN4	50 - 70 (4-5 ft lb)
AN5	100 –140 (8-12 ft lb)
AN4 Propellor	72 (6 ft lb)

- These values relate only to steel nuts on oil-free cadmium plated threads.
- For Engine Bolt Torque Values see Engine Instruction & Maintenance Manual.
- The above values are recommended for all installation procedures contained in this Manual, except where other values are stipulated.
- The above values are not to be used for checking tightness of installed parts during service.

CAUTION

GENERAL RULE: DO NOT REUSE SELF-LOCKING NUTS

2.9 AIRCRAFT STRUCTURE

In the J230 due to it's monocoque construction the majority of the structure is primary. The components of the aircraft which are secondary structure can be identified by the fact that they are designed as fairings and are generally removable. Examples of secondary structure are the engine cowls, speed fairings, ventral fin and wheel spats.

3 Section 3 - Ground Handling, Servicing, Lubrication & Inspection

3.1 GROUND HANDLING

3.1.1 TOWING

The JABIRU aircraft is very light and should always be moved by hand.

Moving the aircraft is accomplished by using the wing struts or prop hub or landing gear struts as push points together with the solid rear fuselage join of the fin to the tail plane.

CAUTION

Do not use control surfaces to move the aircraft --Damage to the control system may result

When pushing at the join of the fin and Tail Plane, take care that you do not jam your fingers under the rudder or in the rudder hinge – remember that it is Connected to the Nose Wheel.

The aircraft may also be moved by placing the propeller in the horizontal and then placing one hand on the propeller on either side of the spinner. The aircraft can then be pulled forward.

CAUTION

Never move the aircraft in this manner whilst the engine is hot as it may fire when the propeller is moved and result in severe injury.

Always ensure that the Master and Ignitions are OFF.

Never approach the propeller when anyone is in the aircraft.

Always treat the propeller as LIVE! IT KILLS!

3.1.2 JACKING

JABIRU is a very light aircraft. Before jacking, ensure that it is as light as possible by removing luggage and any unnecessary fuel.

3.1.2.1 JACKING MAIN GEAR

1. Remove main gear spat on the side to be jacked or both spats if both wheels to be jacked.

2. The aircraft can be lifted on one side by a person of reasonable strength (or 2 of lesser strength) by lifting on the Wing Spar, at the outboard part of the wing strut attachment or towards the wing tip. Be careful lifting at the Wing Tip.

3. Place a solid block (preferably wood) under the bottom of the composite glass leg which will result in the wheel being off the ground when the aircraft is lowered. Be careful not to interfere with brake components or Wheel Spat attachments. Chock the opposite wheel.

4. Repeat for other side if necessary.

The above procedure is useful for wheel/brake servicing or repairs, but is of no value in removing the main undercarriage. If the removal of the main undercarriage is necessary, adopt the following procedure.

1. Obtain a trestle, 20ltr drum or similar object 600mm high.

2. Mount a solid foam block, sandbag, pillow or similar compliant material on top of the trestle. (compliant material should distribute load over minimum 150 square centimetres) Place under the lower wing strut attachment.

3. Support under both wings at the Wing Spar to prevent the aircraft from rocking. Ensure that no fittings are strained.

3.1.2.2 JACKING NOSE GEAR

1. Push down on tail Plane (NOT THE ELEVATOR) until nose gear is off the ground.

2. Place trestle or drum under rear fuselage together with absorbent material such as foam block, sandbags or a pillow.

CAUTION

Ensure trestle does not foul Ventral Fin.

3. Weigh down tail plane with sandbags or similar heavy absorbent (not hard – hard items like bricks are likely to damage the aircraft) material.

CAUTION

Do not lift using control surfaces. Damage to the control surface or control system may result.

3.1.3 HOISTING

This procedure should not be necessary for most service or maintenance procedures. Should hoisting be necessary:

1. Drain Fuel from both wings & Remove wings. See details below

2. Fit shackles to wing support brackets (4 off).

3. Fit cables/rope to shackles and to a centre lift shackle.

4. Hoist only from this point ensuring that cables/ropes do not mark the top of the fuselage at corners above wing support brackets.

3.1.4 LEVELLING

Method 1

For longitudinal levelling use a spirit level on either side of the lower door sills.
For lateral leveling, use an accurate level placed against the flap drive cross tube (inside the cabin, in the roof above the seats).

Longitudinal Method 2

Use the join line of the cowl top & bottom halves.

3.1.5 PARKING

Parking precautions depend principally on local conditions. As a general precaution, chock the wheels and tie the control handle back firmly with a seat belt to lock the controls. Park into the wind and tie down the aircraft as outlined in below if a hangar is not available.

3.1.6 TIE DOWN

When mooring the aircraft in the open, head into wind if possible. Secure control surfaces by tying the control handle back firmly with a seat belt.

Then:

1. Tie ropes to the top end of each wing strut. Secure opposite end of the ropes to ground anchors located at approximately 30 degrees to the vertical, outboard of the top wing attachment point. Ensure that the ropes have sufficient slack to not strain the wing attachments should a tyre deflate while the aircraft is tied down.

2. Tie rope to the Tail Tie-down Hole in the Ventral Fin. Secure the opposite end of rope to ground anchors.

3.1.7 FLYABLE STORAGE

Flyable storage is defined as a maximum of 30 days non-operational storage.

Ensure that the engine has been stopped by turning off the fuel valve, thereby not leaving any fuel in the carburettor bowl.

Every 7th day the propeller should be rotated through 5 revolutions, without running the engine. Leave the propeller in the horizontal position to ensure even distribution of liquids in the wood. If left in the vertical position, liquids will drain to the lower tip resulting in an unbalanced propeller.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

Store under cover, away from direct sunlight.

In addition, the Pitot tube, static air vent, air vents, openings in the engine cowl and other similar openings should have protective covers fitted to prevent entry of foreign materials and beings (especially wasps).

3.1.8 RETURNING AIRCRAFT TO SERVICE

After flyable storage, returning the aircraft to service is accomplished by performing a thorough pre-flight inspection. Ensure all protective covers are removed.

3.1.9 TEMPORARY OR INDEFINITE STORAGE

Temporary storage is defined as aircraft in non-operational status for a maximum of 90 days.

Treat as for flyable storage (see Paragraph 3.1.7), plus:

- For temporary storage, fill fuel tank with correct grade of gasoline (to prevent moisture accumulation).

- For indefinite storage, drain fuel tank, ensure carburettor bowl is empty by running engine with fuel valve off until it stops or by draining bowl.

Then:

1. Clean aircraft thoroughly.

2. Clean any dirt, oil or grease from tyres and coat tyres with a tyre preservative. Cover tyres to protect against dirt and oil.

3. Either block up undercarriage/fuselage to relieve pressure on tyres or rotate wheels every 30 days to prevent flat-spotting the tyres.

4. Seal or cover all openings.

5. Remove battery and store in a cool dry place. Service the battery periodically and charge as required.

   NOTE: It is recommended that a battery which is not used should be charged every 30 days.

6. Disconnect spark plug leads and remove spark plugs from each cylinder. Using an oil can or spray atomiser, spray preservative oil through a spark plug hole of each cylinder with the piston in the down position.

   NOTE: Use SHELL Aero fluid 2UN (MIL-C-6529C Type 1) or similar engine corrosion inhibitor.

Rotate the propeller 10 – 12 times, leaving it in the horizontal position.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

7. Install spark plugs and connect leads.

8. Seal exhaust pipes. Attach a red streamer to each. DO NOT seal fuel tank breathers.

9. Place protective covers over Pitot tube, static source vents, air vents and openings in engine cowl to prevent the entry of foreign material or beings (especially wasps).

10. Attach a warning placard to the propeller stating that vents and breathers have been sealed. The engine must not be started with the seals in place.

11. Every 7 days the propeller should be rotated through 5 revolutions without running the engine – leave propeller in the horizontal position.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

3.1.10 INSPECTION DURING STORAGE

1. Generally inspect airframe and clean as necessary.

2. Inspect the interior of at least one cylinder through the spark plug hole for corrosion at least once a month.

3. If, at the end of the 90 day period, the aircraft is to be continued in non-operational storage – repeat Steps 1-13 above (most will only need to be checked).

3.1.11 RETURNING AIRCRAFT TO SERVICE

After temporary storage, the procedures for returning the aircraft to service are as follows:

1. Remove aircraft from blocks and check tyres for proper inflation.

2. Check battery and install.

3. Check carburettor air filter and service if necessary.

4. Remove warning placard from propeller.

5. Remove materials used to cover openings.

6. Remove, clean and gap spark plugs.

7. While spark plugs are removed, rotate propeller using the starter motor for several revolutions to clear excess preservative oil from cylinders.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

8. Install spark plugs – torque to 20 Nm (180 inch/lbs).

9. Check fuel filter – replace if necessary.

10. Check brake fluid level.

11. If returning to service after indefinite storage, fill fuel tanks with correct grade of fuel.

12. Check fuel tank and fuel lines for moisture and sediment. Drain enough fuel to eliminate any moisture and sediment.

13. Check fuel tank breather is clear.

14. Perform a thorough pre-flight inspection.

15. Start and warm engine.

3.2 WEIGHING

3.2.1 SCALE LOCATIONS

For weighing three scales are used. Position one under each main wheel and one under the nose wheel.

3.2.2 PROCEDURE

1. Position the aircraft on the scales on a level surface, preferably one that positions can be marked on to, in the configuration to be weighed.
2. Chock the main wheels and make sure the brake is released. (If the chocks are of significant weight their weight will need to be subtracted from the relevant scale reading).
3. Level the aircraft using technique in 3.1.4 Levelling. If the nose needs to be raised place packers under the nose wheel. If the nose needs to be lowered pack under main wheels or deflate nose wheel. (remember to re-inflate to operating pressure before use)
4. Using a square or a plumb bob mark the wheel centres on to the floor or scale surface. Both sides of the nose wheel axle must be marked to eliminate any error if it isn't exactly straight. Also again using a plumb bob or a level mark the datum (wing leading edge) onto the floor. Use points outboard of the main wheels on the wing leading edge for the datum.
5. Take the wheel weights. When the wheel weights are being taken there must be nil wind blowing on the aircraft. Due to the light nature of the J230 even a small breeze can cause significant weight transfer and so C of G errors.
6. Using a string line or similar mark the datum across under the aircraft on the floor. Measure the horizontal for/aft distance for each wheel (both sides of nose wheel) to the datum. All distances aft of the datum are consider positive and all distances forward of the datum are negative. See Figure 2: Weighing Diagram.

7. Repeat steps 5 and 6 again to avoid errors.
8. Due to the light weight of this aircraft measurements must have an accuracy of at least +/-0.5kg and +/-1mm.
9. Average of the measurements taken for each quantity and the average of the two nose wheel distances are now used to calculate the aircrafts C.G.

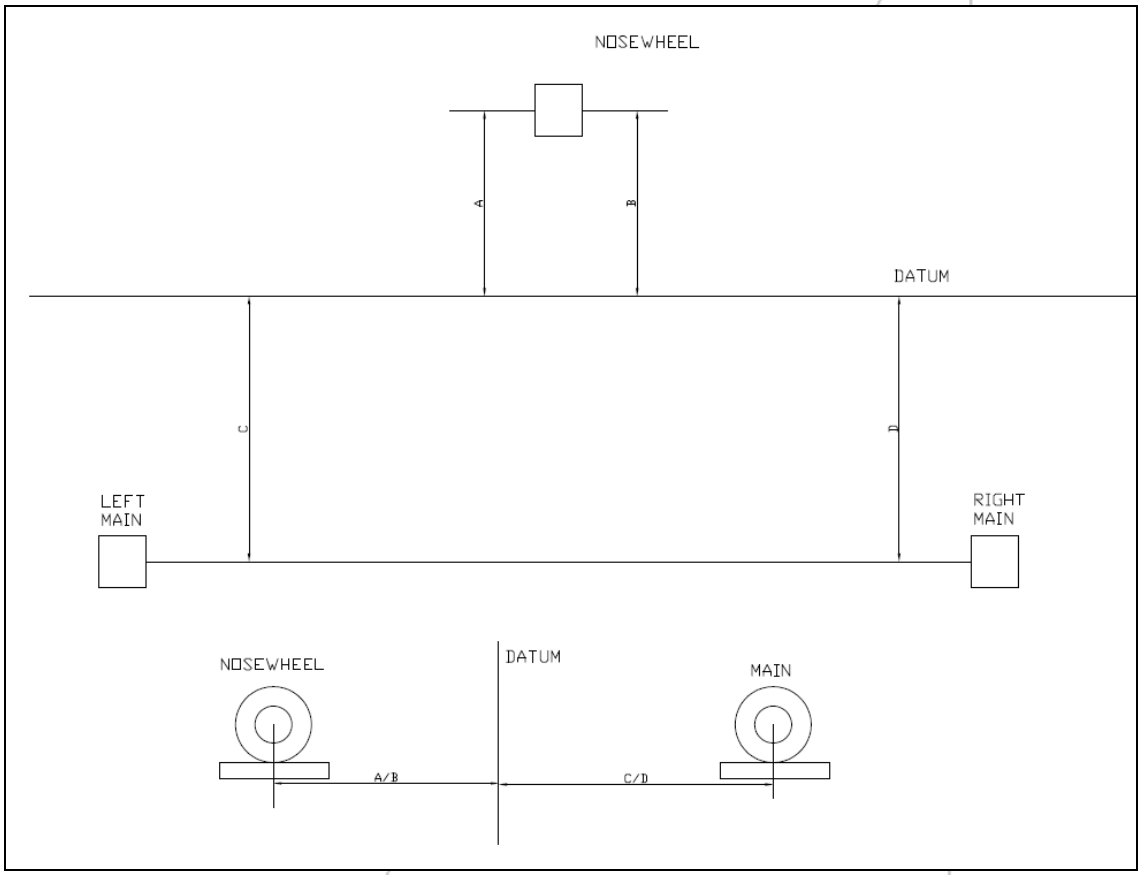


Figure 2: Weighing Diagram.

3.3 SERVICING

Servicing requirements are shown in the service table below (Table 4. Inspection Chart). The following paragraphs supplement this table by adding details not included.

Note that Inspection Requirements are detailed at Paragraph 3.5.

3.3.1 ENGINE SERVICING SCHEDULE

3.3.1.1 PRE-FLIGHT:

- Refer to Flight Manual

3.3.1.2 OTHER SERVICING

- Refer to Engine Instruction & Maintenance Manual

3.3.2 OTHER SERVICING

- Replace flexible oil & fuel line in engine compartment every 2 years or when visible deterioration (cracking, hardening) occurs.

3.3.3 FUEL

The fuel tanks should be filled immediately after flight to lessen condensation of moisture. The tank capacity is listed in the Aircraft Specifications Above.

3.3.4 FUEL DRAIN

A fuel drain is located in the Left & Right hand fuel tanks near the wing root. A third drain is located under the fuselage behind the sound curtain at the rear of the cabin. Drain fuel from each drain after each refueling to ensure moisture and contaminants are not present.

3.3.5 CARBURETTOR AIR FILTER

The Carburettor air filter keeps dust and dirt from entering the induction system. The value of maintaining the air filter in a good, clean condition cannot be overstressed. More engine wear is caused through the use of a dirty or damaged air filter than is generally believed. The frequency with which the filter should be removed, inspected and cleaned will depend on the operating conditions. A good general rule, however, is to remove, inspect and clean the filter ever 100 hours of engine operating time and more frequently if warranted by the operating conditions. Clean only with compressed air.

3.3.6 BATTERY

The Battery is a sealed type, and so is not a serviceable item. If electrolyte corrosion occurs, Use bicarbonate of soda (baking soda) and clean water to neutralise electrolyte of corrosion. Follow with a thorough flushing with clean water. Remove battery and clean residue from aircraft.

Clean cable and terminal connections with a wire brush, then coat with petroleum jelly before connecting cables.

3.3.7 TYRES

Maintain tyre pressure at the air pressure specified in Aircraft Specifications above. When checking tyre pressure, examine tyres for wear, cuts, bruises and slippage. Remove oil, grease and mud from tyres with soap and water.

NOTE:

Recommended tyre pressures should be maintained, especially in cold weather. Remember that any drop in temperature of the air inside the tyre causes a corresponding drop in tyre pressure.

3.3.8 HYDRAULIC BRAKES

Check brake master cylinder and refill with automotive brake fluid **(DOT 3 or DOT 4)** Bleed the brake system of any trapped air whenever there is a spongy response on the brake lever.

Refer to Section 6.8 for filling and bleeding of the brake system.

CAUTION

The JABIRU uses automotive brake fluid (DOT 3 or DOT 4). DO NOT use Aircraft hydraulic fluid (mineral based) or damage to the brake system will result.

3.4 CLEANING

Keeping the aircraft clean is important. Besides maintaining the appearance of the aircraft, cleaning makes inspection and maintenance easier.

3.4.1 WINDSHIELD AND WINDOWS

These should be cleaned carefully with plenty of fresh water and a mild detergent, using the palm of the hand to feel and dislodge any caked dirt or mud. A sponge, soft cloth or chamois may be used but only as a means of carrying water to the plastic. Rinse thoroughly then dry with a clean, moist chamois. DO NOT rub the plastic with a dry cloth as this builds up an electrostatic charge, which attracts dirt. Oil and grease may be removed by using a soft cloth moistened with mineral turpentine.

CAUTION

DO NOT use gasoline, alcohol, Buzene, Acetone, Carbon Tetrachloride, fire extinguisher fluid, de-icer fluid, lacquer thinner or glass window cleaning spray.
These solvents will soften and craze the Plastic.
DO NOT use a canvas cover on the windshield or windows as the cover may scratch the plastic.

3.4.2 INTERIOR SURFACES

Interior surfaces should be cleaned with a soft cloth, fresh water and a mild detergent. Volatile substances such as those mentioned in the previous section must never be used.

3.4.3 EXTERIOR SURFACES

The exterior surfaces, under normal conditions, require a minimum of polishing and buffing.

CAUTION

DO NOT polish or buff the aircraft within the first 2 weeks after delivery from the factory as surface treatments take up to 14 days to properly cure.

Generally, the exterior surfaces can be kept bright by washing with water and a mild soap or detergent, followed by a rinse with water and drying with a cloth or a chamois.

Remove stubborn oil and grease with a cloth moistened with mineral turpentine, then wash with water and a mild soap, rinse and dry as stated before.

After the curing period the aircraft may be waxed with a good quality automobile wax. A heavier coating of wax on the leading edges of the wing, tail and on the engine nose cap will help reduce abrasion encountered in these areas.

CAUTION

DO NOT use Silicon based cleaning materials as Silicon is absorbed into the composite materials and may affect reparability.

3.4.4 ALUMINIUM SURFACES

The aluminium surfaces require a minimum of care, but should not be neglected. Wash and clean as detailed in Section 3.4 above.

CAUTION

JABIRU aircraft are designed for minimum maintenance. **However, special attention should be applied when the aircraft has been used in extremely corrosive conditions, e.g. beach landings with sand and salt. Always ensure the aircraft is thoroughly hosed and washed immediately after such use**. Pay particular attention to wheels and external controls. Always hose down wheels and spats after landings in mud or sand to ensure brakes, wheels and spats are free of dirt build-up.

3.4.5 ENGINE AND ENGINE COMPARTMENT

The engine should be kept clean since dirty cooling fins and baffles can cause overheating of the engine. Also, cleaning is essential to minimise any danger of fire and provide easy inspection of components.

CAUTION

DO NOT hose engine. Electrical components may be damaged by moisture. Ensure electrical components are protected against moisture. Caustic cleaning solutions should not be used.

Recommended cleaning procedure is lightly spray with degreasing fluid – after sealing coils and starter motor. WIPE clean with brush and cloth.

3.4.6 PROPELLER

Wash with soap and water, rinse with clean water and dry with cloth or chamois.

CAUTION

Do not use a wax based substance as this would make it almost impossible to refurbish the prop if needed at a later stage.

3.4.7 WHEELS

The wheels should be washed periodically and examined for corrosion, cracks or dents in the wheel halves or in the flanges or hubs. If defects are found, remove and repair in accordance with Section 6. Discard cracked wheel halves, flanges or hubs and install new parts.

3.5 LUBRICATION

There are no lubrication requirements for the JABIRU other than those detailed in Appendix 1.

3.5.1 WHEEL BEARING – MAINS AND NOSE

At each 100 hour inspection, jack the wheel, spin the wheel and check for free running and any play on the shaft. Remove and replace if there is any sign of binding or wear.

3.6 INSPECTION

3.6.1 INSPECTION INTERVALS

A tolerance of plus or minus 3 hours is allowable on all of the service intervals given within this manual – i.e. a 100-hourly inspection may be carried out at any time between 97 and 103 hours of operation.

3.6.2 INSPECTION CHARTS

The chart at Paragraph 3.7.2 shows the recommended intervals at which items are to be inspected.

As shown in the chart, there are items to be inspected each 100 hours and each 200 hours. There are also special inspection items which require inspection of servicing at intervals other than the above.

The engine Instruction Manual also details engine inspection schedules and should be consulted in addition to this chart.

- When conducting an inspection at 100 hours, all items marked under EACH 100 HOURS would be inspected, serviced or otherwise completed as necessary to ensure continuous airworthiness.

- At each 200 hours, the 100 hours items would be completed in addition to the items marked under EACH 200 HOURS as necessary to insure continuous airworthiness.

- A complete aircraft inspection includes all 100 and 200 hour items together with those shown in the Engine Instruction Manual.

3.6.3 INSPECTION GUIDELINES

3.6.3.1 ENGINE

Refer to Engine Instruction & Maintenance Manual.

3.6.3.2 CONTROL CABLE INSPECTIONS

Inspections are required to be carried out on the primary control cables (aileron, elevator and rudder) at intervals detailed in the Airworthiness Limitations Section of this Manual (Appendix V or Section 22).

These inspections are to be carried out as described below:

- Measure the movement of the trailing edge of each control allowed by cable free play.
- Disconnect both ends of the cable.
- Move the cable by hand through it's full range of movement to check freedom of movement.
- Using a spring balance with graduations of no more than 300g, measure the friction required to move the cable. Repeat this step to give a minimum of 5 friction measurements in each direction of travel.
- Reconnect one end of the cable and measure slack in the cable.

The cable must be replaced if the following is found:

- Excess friction – **maximum allowable force to move cable 1.9kg.**
- Excess slack in cable – **maximum allowable cable slack 3.5mm**
- "Hard" or "tight" patches of the cable travel.
- Gritty or rough operation.
- Significant visible damage or degradation such as corrosion, scoring etc.

Remedial Action

Remedial action (replacement or re-routing of cable to reduce measured values) is required if the control free play exceeds the values given in Table 3. Control Free Play Limits

Table 3. Control Free Play Limits

Control	Free-Play
Elevator	4.0-mm
Rudder	3.0-mm
Aileron	3.25-mm

3.6.3.3 AIRFRAME / STRUCTURE

A visual inspection should be conducted each 100 hours. Check for cracking of the paintwork, whiting of unpainted areas, movement of wing attachments and threaded bushes, movement of undercarriage attachments, loosening of firewall/engine attachments.

Wing struts should be inspected for loose bolts, excessive clearance in wing strut attachments or corrosion.

Cable clamps should be inspected for evidence of movement and security.

3.6.3.4 MOVEABLE PARTS

lubrication, servicing, security of attachments, binding, excessive wear, safety, proper operation, proper adjustment, correct travel, cracked fittings, security of hinges, defective bearings, cleanliness, corrosion, deformation, sealing and tension.

3.6.3.5 FLUID LINES AND HOSES

leaks, cracks, kinks, chafing, proper radius, security, corrosion, deterioration, obstruction and foreign matter. Ensure that all lines have a steady gradient from the wing tank to the header tank – no humps or dips (U's or inverted U's in the line). Figure 3 refers.

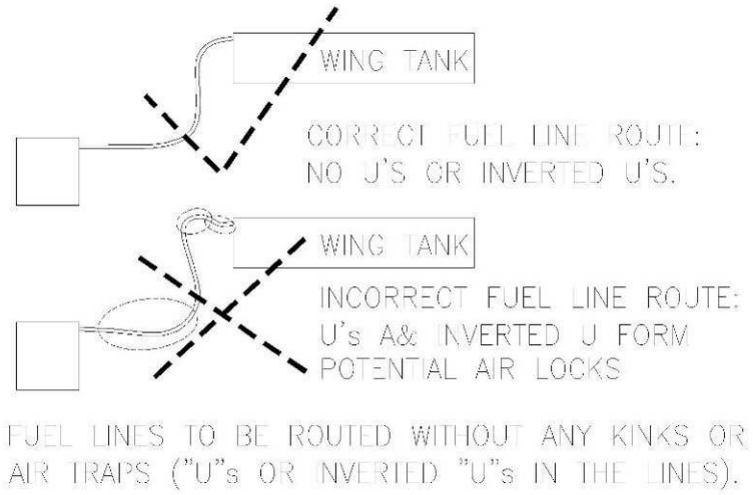

WING TANK
CORRECT FUEL LINE ROUTE:
NO U'S OR INVERTED U'S.
WING TANK
INCORRECT FUEL LINE ROUTE:
U's A& INVERTED U FORM
POTENTIAL AIR LOCKS
FUEL LINES TO BE ROUTED WITHOUT ANY KINKS OR
AIR TRAPS ("U"s OR INVERTED "U"s IN THE LINES).

Figure 3. Fuel Line Routing

3.6.3.6 ELECTRIC FUEL PUMP

- Ensure the fuel tanks are low (Less than 40L total).
- Turn master switch ON and confirm that the fuel pressure light is illuminated. If it does not light, turn the master switch OFF and remove residual pressure from the lines.
- Turn the electric fuel pump ON.
- Confirm that the pump is audible and that the pressure warning light turns off.

3.6.3.7 METAL PARTS

security of attachment, cracks, metal distortion, broken welds, corrosion, and any other apparent damage.

3.6.3.8 WIRING

security, chafing, burning, defective insulation, loose or broken terminals, heat deterioration and corroded terminals.

3.6.3.9 BOLTS IN CRITICAL AREAS

correct torque in accordance with torque values given in the chart in Section 2, when installed or when visual inspection indicates the need for a torque check.

NOTE: Torque values listed in section 2 are derived from oil-free cadmium-plated threads, and are recommended for all installation procedures contained in this manual except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

3.6.3.10 FILTERS, SCREENS AND FLUIDS

cleanliness, contamination and/or replacement at specified intervals.

3.6.3.11 AIRCRAFT FILE

Various data, information and licenses are part of the aircraft file. Check that the following documents are up-to-date and in accordance with current Civil Aviation Authority Regulations. Most of the items listed are required by the Australian Civil Aviation Authority Regulations.

To be displayed in the aircraft at all times:
- Placards as detailed in Flight Manual / Owner's Manual.

To be carried in the aircraft at all times:
- Flight Manual / Owner's Manual

To be made available on request:
- Aircraft Registration
- Radio Station License
- Pilot License/Certificate including Medical Certificate (if appropriate).

3.6.3.12 ENGINE RUN-UP

Before beginning the step-by-step inspection, start, run-up and shut-down the engine in accordance with instructions in the Flight Manual and Section 18 (APPENDIX I - JABIRU 3300 ENGINE) of this manual. During the run-up, observe the following, making note of any discrepancies or abnormalities:

1. Engine temperatures and pressures.
2. Static RPM. (Also refer to Engine Instruction Manual).
3. Magneto drop. (Also refer to Engine Instruction Manual).
4. Engine response to changes in power.
5. Any unusual engine noises.
6. Fuel shut-off valve; operate engine in ON position and in OFF position long enough to ensure shut-off functions properly.
7. Idling speed.

After the inspection has been completed, an engine run-up should again be performed to determine that any discrepancies or abnormalities have been corrected.

3.7 MAJOR INSPECTION / REPLACEMENT

3.7.1 MANDATORY INSPECTION

3.7.1.1 AIRFRAME

The J230-C does not have an overall airframe life limitation.

3.7.1.2 UNDERCARRIAGE

Main undercarriage bolts and nose leg pivot bolts shown in Figure 4 are to be changed every 500 hours TIS.

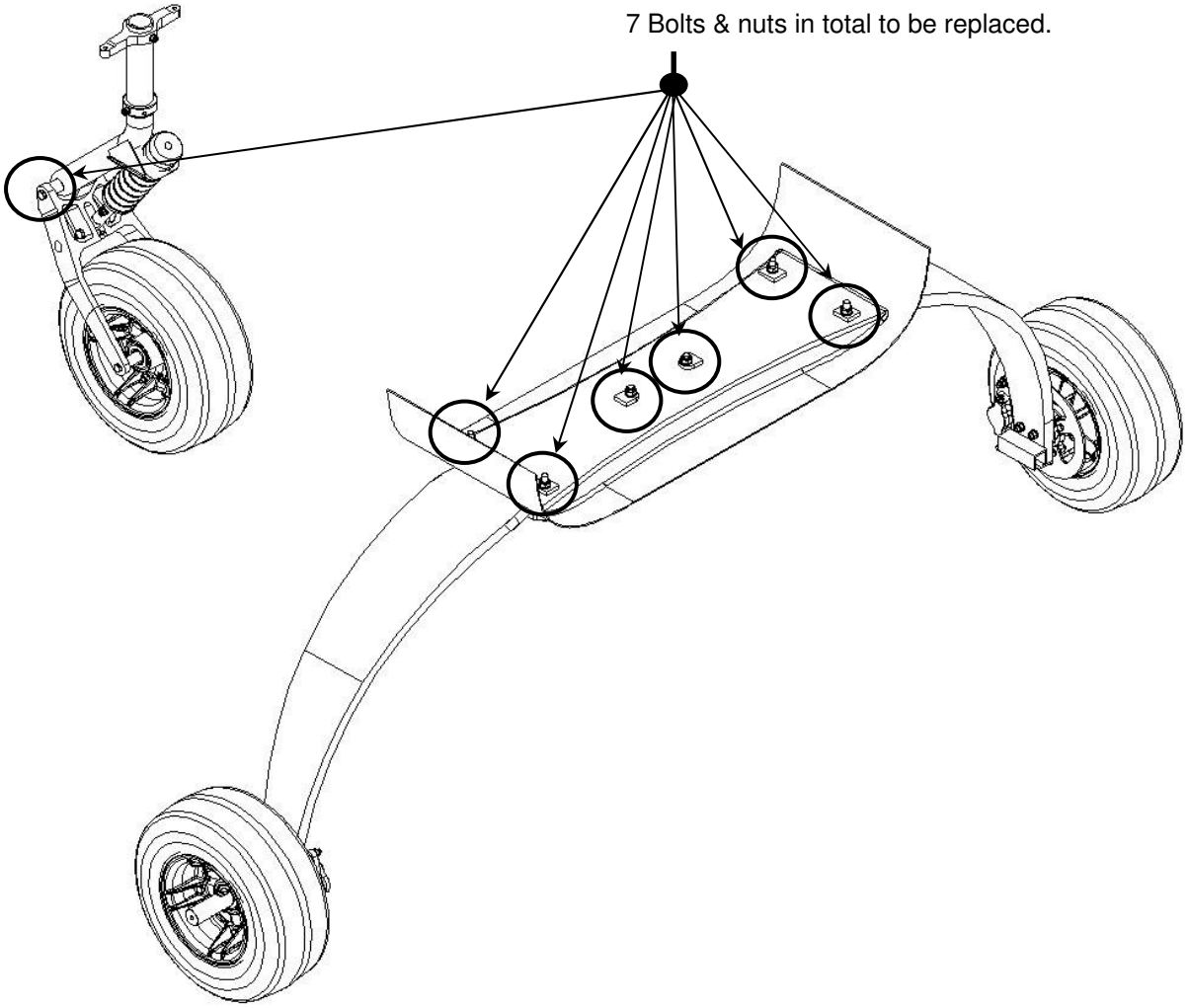


Figure 4. Undercarriage

3.7.2 INSPECTION CHART

IMPORTANT

READ ALL INSPECTION RQUIREMENTS PRIOR TO USING THESE CHARTS.

Table 4. Inspection Chart

		Annual Inspection	Each 200 Hours	Each 100 Hours	
PROPELLER					
1	Spinner		*		*
2	Spinner Flange		*		*
3	Spinner screws		*		*
4	Propeller		*		*
5	Propeller bolts/nuts - Tension				*
6	Spinner / Prop Tracking		*		*
ENGINE COMPARTMENT Check for oil, fuel, exhaust & induction leaks, then clean entire engine & compartment before inspection. **NOTE: REFER TO ENGINE MAINTENANCE MANUAL FOR ENGINE-SPECIFIC INSPECTIONS.**					
1	Carburetor air filter		*		*
2	Engine baffles and air ducts				*
3	Oil Hoses, lines, fire-sleeve & fittings		*		*
4	Fuel Hoses, lines, fire-sleeve & fittings		*		*
5	SCAT Hose Condition		*		*
6	Electrical wiring				*
7	Engine controls and linkages		*		*
8	Engine mounts, mount structure		*		*

		Annual Inspection	Each 200 Hours	Each 100 Hours	
9	Starter, solenoid and electrical connections		*		*
10	Coils and electrical connections		*		*
11	Carburettor heat system		*		*
12	Firewall				*
13	Exhaust System (Including Muffler)		*		*
14	Fuel pressure warning light switch		*		*
15	Cabin heat system		*		*
16	Engine cowlings and clips		*		*
	Fuel System				
1	Fuel filters, drain valves, carburetor bowl		*		*
2	Electronic fuel boost pump and fittings				*
3	Fuel lines and connectors		*		*
4	Fuel line routing between wing & header tanks – no U's or inverted U's		*		*
5	Fire sleeves		*		*
6	Fuel line sheath inside cabin		*		*
7	Fuel tank caps & placards		*		*
8	Fuel tank vent ball valve check		*		*
9	Fuel Tanks		*		*
10	Fuel shut-off valve & placards		*		*
	Landing Gear				
1	Main gear wheels & fairings		*		*
2	Nose gear wheel, steering links, tension links & fairings		*		*

		Annual Inspection	Each 200 Hours	Each 100 Hours	
3	Wheel bearings		*		*
4	Nose gear strut		*		*
5	Nose gear housing & bushes				
6	Main gear struts, clamps, bolts & nuts		*		*
7	Tyres & tubes		*		*
8	Brake fluid, hoses, linings, discs, brake assemblies & master cylinder		*		*
9	Rod ends – condition, freedom of movement		*		*
10	Brake operational check		*		*
	Airframe				
1	Aircraft exterior				*
2	Aircraft structure		*		*
3	Windows, windshield, doors & seals				*
4	Seatbelts & shoulder harnesses		*		*
5	Seat structure		*		*
6	Instruments & markings				*
7	Instrument plumbing & wiring				*
8	Instrument panel, shock mounts, decals & labels				*
9	Fresh air ventilation system				*
10	Cabin heat		*		*
11	Cabin upholstery, trim				*
12	Switches, fuses				*
13	Pitot & static system				*

		Annual Inspection	Each 200 Hours	Each 100 Hours	
14	Radio, intercom & headsets		*		*
15	Antenna & cable				*
16	Door catches				*
17	Stall warning				*
18	Battery, battery cradle & cables		*		*
	Control Systems In addition to the items listed below, always check for correct direction of movement (particularly if controls have been disconnected) and correct travel				
1	Cables & clamps		*		*
2	Rod ends		*		*
3	Trim control & cable				*
4	Travel stops				*
5	Decals & labels				*
6	Flap control & linkages		*		*
7	Elevator control & linkages		*		*
8	Rudder pedals & linkages		*		*
9	Exterior surfaces of control surfaces		*		*
10	Control horns, hinges & hinge lock tabs.		*		*
11	Aileron controls & linkages		*		*
12	Rigging check flight				*
13	Throttle controls				*

4 Section 4 - Fuselage

4.1 FUSELAGE

The Fuselage is a composite monocoque (self-supporting) structure and includes both the Horizontal Stabiliser and Vertical Fin.

All repairs must be referred to Jabiru Aircraft Pty Ltd or approved local representative.

4.2 WINDSHIELD AND WINDOWS

4.2.1 DESCRIPTION

The windshield and windows are one-piece acrylic plastic panels set in sealing strips with Epoxy Resin & Fibre Flock and secured to the fuselage with screws/nuts.

IMPORTANT

In the event of a bird strike, the windshield is the only protection for the crew and therefore must be maintained in excellent condition. Cracks up to 25 mm in length should be stop drilled; those longer than 25 mm should NOT be repaired – the windshield must be replaced.

4.2.2 CLEANING

Refer to Section 3.4.

4.2.3 WAXING

Waxing will fill in minor scratches in clear plastic and help protect the surface from further abrasion. Use a good grade of commercial wax (NOT SILICON BASED) applied in a thin, even coat. Bring wax to a high polish by rubbing lightly with a clean, dry flannel cloth.

CAUTION

Silicon based waxes and polish are not recommended as silicon may be absorbed into the glass fibre laminate and effect the reparability due to impairing bonding.

4.2.4 REPAIRS

Damaged window panels and windshield may be removed and replaced if damage is substantial. However, certain minor repairs as prescribed in the following paragraphs can be made successfully without removing the damaged part from the aircraft.

The procedure for repairing cracks is only recommended for low stress areas. No repairs of any kind are recommended on highly stressed or compound curved areas or where repair would be likely to affect the pilot's field of vision.

4.2.5 SCRATCHES

Scratches on clear plastic surfaces can be removed by hand buffing and polishing using Plastic Polish available from JABIRU as Part No.: NOVUS#2.

NOTE: Rubbing plastic surface with a dry cloth will build up an electrostatic charge which will attract dirt particles and may eventually cause scratching of the

surface. After applying polish, dissipate this charge by rubbing surface with a slightly damp chamois. This will also remove dust particles which have collected while wax is hardening.

4.2.6 CRACKS

When a crack appears, drill a hole at the end of the crack to prevent further spreading. Hole should be approximately 1/16 inch in diameter, depending on length of crack and thickness of material. An unfluted drill should be used.

4.2.7 REMOVAL

As the windscreen and windows are bonded into the fuselage, it is not possible to remove them without destroying them. Once windows have been broken out, any screws used in the original installation should be removed.

4.2.8 INSTALLATION

1. Ensure all old epoxy resin has been removed from the fuselage sealing strips (around the window frames).

2. Check new windscreen for fit. File or grind away any excess material to ensure a close fit. Do not attempt to cut with any type of saw.

3. Wet the window frame joggle with raw epoxy resin. Apply a bead of Epoxy & Flock around the outer edge of the windscreen.

4. Place windscreen accurately over the sealing strips and locate with one screw top and bottom.

5. Fit other screws.

6. Take care not to crack windscreen when installing. DO NOT over tighten screws – cracking will result.

4.3 CABIN DOORS

4.3.1 REMOVAL AND INSTALLATION

Removal of doors is achieved by removing the hinge bolts or removing the machined screws that attach the hinges to the door frame. Refer to Figure 5 and Figure 6 below.

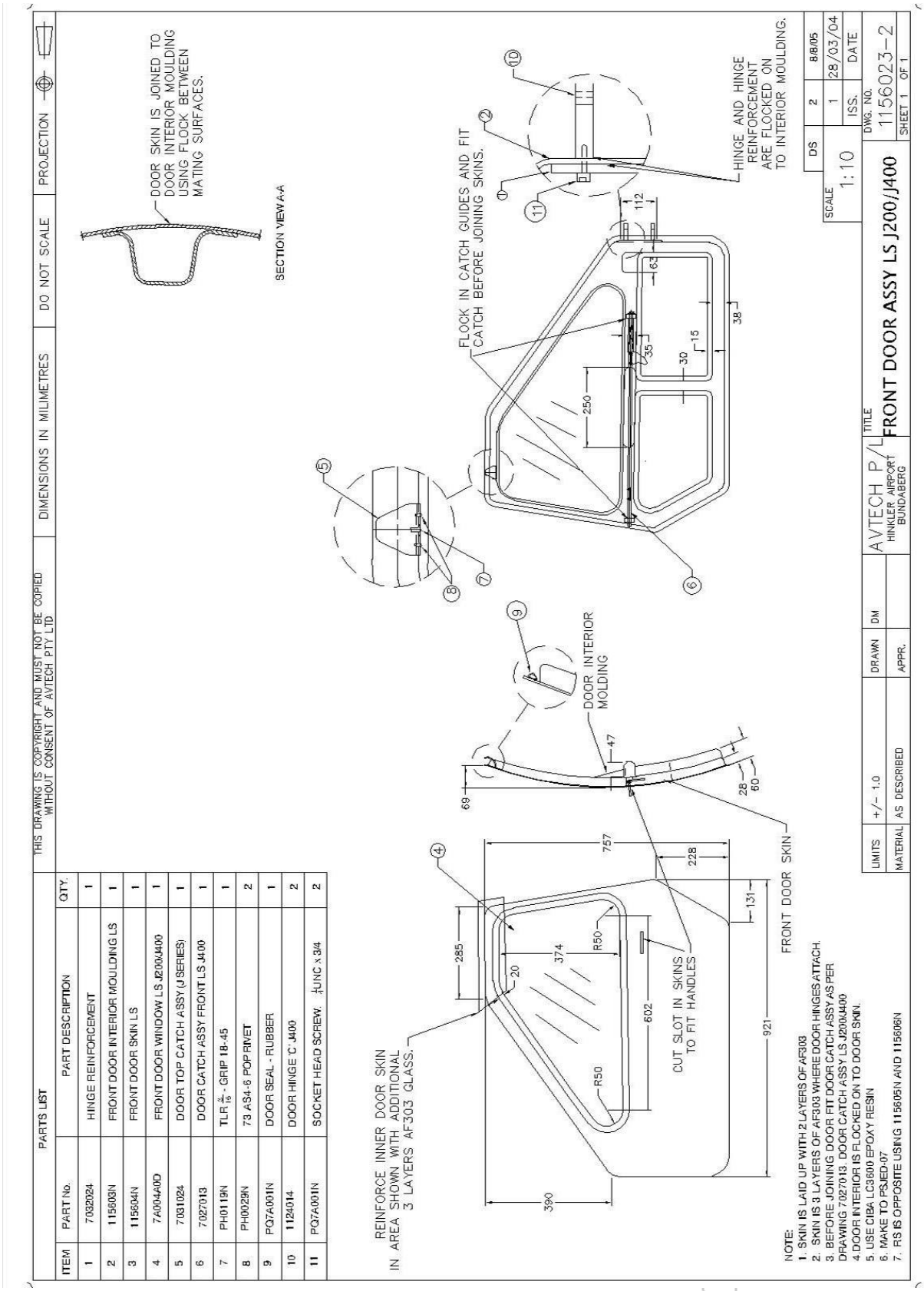

PARTS LIST
ITEM | PART No. | PART DESCRIPTION | QTY.
1 | 7032024 | HINGE REINFORCEMENT | 1
2 | 115603N | FRONT DOOR INTERIOR MOULDING LS | 1
3 | 115604N | FRONT DOOR SKIN LS | 1
4 | 7A004A0D | FRONT DOOR WINDOW LS J200/J400 | 1
5 | 7031024 | DOOR TOP CATCH ASSY (J SERIES) | 1
6 | 7027013 | DOOR CATCH ASSY FRONT LS J400 | 1
7 | PH0119N | TLR 2/15 - GRIP 18-45 | 1
8 | PH0029N | 73 AS4-6 POP RIVET | 2
9 | PQ7A001N | DOOR SEAL - RUBBER | 1
10 | 1124014 | DOOR HINGE 'C' J400 | 2
11 | PQ7A001N | SOCKET HEAD SCREW, 1/4UNC x 3/4 | 2
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
DOOR SKIN IS JOINED TO DOOR INTERIOR MOULDING USING FLOCK BETWEEN MATING SURFACES.
SECTION VIEW A-A
FLOCK IN CATCH GUIDES AND FIT CATCH BEFORE JOINING SKINS.
HINGE AND HINGE REINFORCEMENT ARE FLOCKED ON TO INTERIOR MOULDING.
DOOR INTERIOR MOLDING
REINFORCE INNER DOOR SKIN IN AREA SHOWN WITH ADDITIONAL 3 LAYERS AF303 GLASS.
CUT SLOT IN SKINS TO FIT HANDLES
FRONT DOOR SKIN
NOTE:
1. SKIN IS LAID UP WITH 2 LAYERS OF AF303
2. SKIN IS 3 LAYERS OF AF303 WHERE DOOR HINGES ATTACH.
3. BEFORE JOINING DOOR, FIT DOOR CATCH ASSY AS PER DRAWING 7027013. DOOR CATCH ASSY LS J200/J400
4. DOOR INTERIOR IS FLOCKED ON TO DOOR SKIN.
5. USE CIBA LC3600 EPOXY RESIN
6. MAKE TO PSJED-07
7. RS IS OPPOSITE USING 115605N AND 115606N
LIMITS +/- 1.0
MATERIAL AS DESCRIBED
DRAWN DM
APPR.
AVTECH P/L
HINKLER AIRPORT BUNDABERG
TITLE
FRONT DOOR ASSY LS J200/J400
SCALE 1:10
DS 2 8/8/05
1 28/03/04
ISS. DATE
DWG. NO. 1156023-2
SHEET 1 OF 1

Figure 5. Front Door Assembly

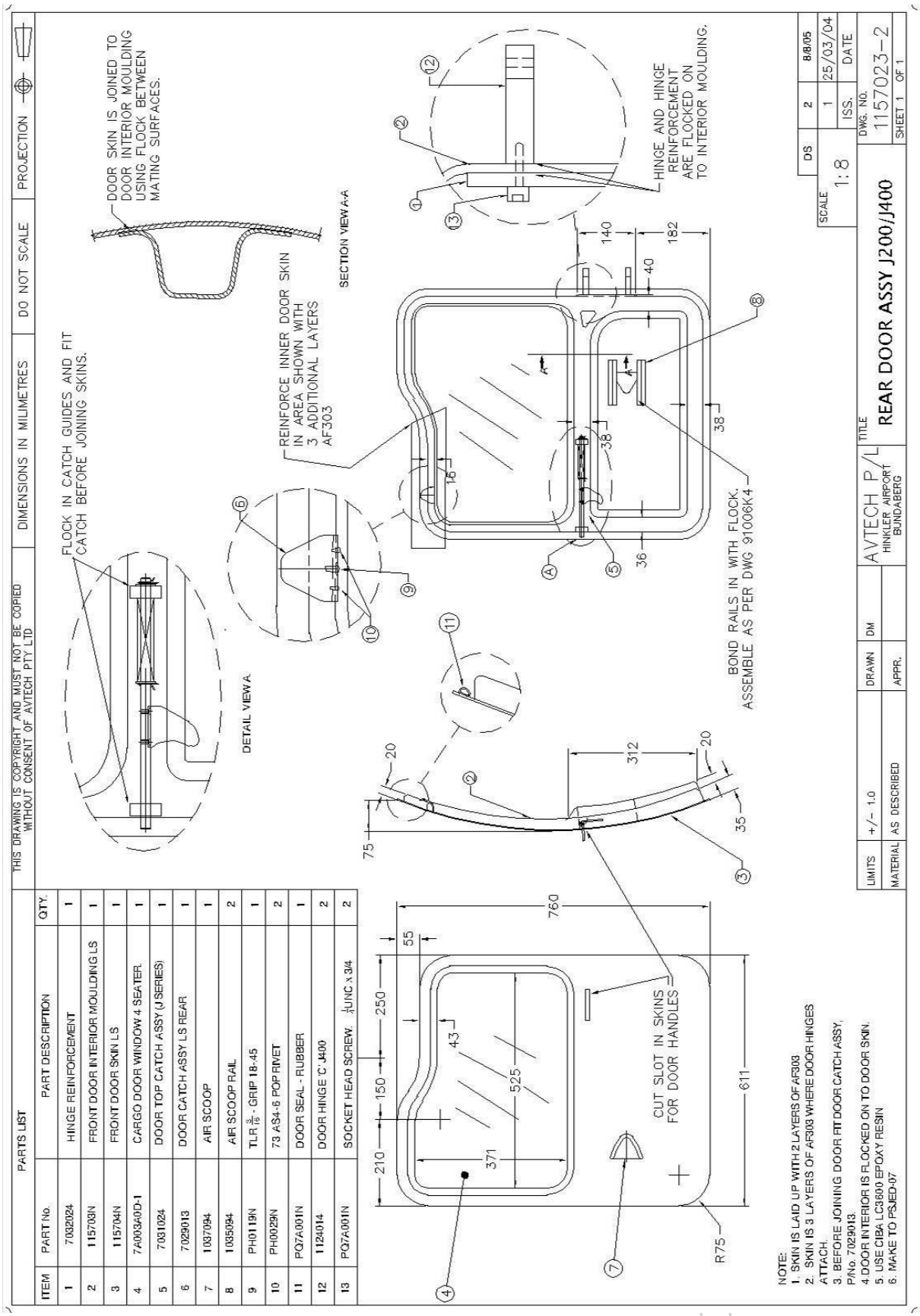

PARTS LIST
ITEM | PART No. | PART DESCRIPTION | QTY.
1 | 7032024 | HINGE REINFORCEMENT | 1
2 | 115703N | FRONT DOOR INTERIOR MOULDING LS | 1
3 | 115704N | FRONT DOOR SKIN LS | 1
4 | 7A003A0D-1 | CARGO DOOR WINDOW 4 SEATER. | 1
5 | 7031024 | DOOR TOP CATCH ASSY (J SERIES) | 1
6 | 7029013 | DOOR CATCH ASSY LS REAR | 1
7 | 1037094 | AIR SCOOP | 1
8 | 1035094 | AIR SCOOP RAIL | 2
9 | PH0119N | TLR 5/16 - GRIP 18-45 | 1
10 | PH0029N | 73 A34-6 POP RIVET | 2
11 | PQ7A001N | DOOR SEAL - RUBBER | 1
12 | 1124014 | DOOR HINGE 'C' J400 | 2
13 | PQ7A001N | SOCKET HEAD SCREW. 1/4UNC x 3/4 | 2
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
DOOR SKIN IS JOINED TO DOOR INTERIOR MOULDING USING FLOCK BETWEEN MATING SURFACES.
SECTION VIEW A-A
FLOCK IN CATCH GUIDES AND FIT CATCH BEFORE JOINING SKINS.
REINFORCE INNER DOOR SKIN IN AREA SHOWN WITH 3 ADDITIONAL LAYERS AF303
DETAIL VIEW A.
HINGE AND HINGE REINFORCEMENT ARE FLOCKED ON TO INTERIOR MOULDING.
BOND RAILS IN WITH FLOCK. ASSEMBLE AS PER DWG 91006K4
CUT SLOT IN SKINS FOR DOOR HANDLES
760
611
525
371
312
250
210
182
150
140
55
43
40
38
36
35
20
18
75
R75
NOTE:
1. SKIN IS LAID UP WITH 2 LAYERS OF AF303
2. SKIN IS 3 LAYERS OF AF303 WHERE DOOR HINGES ATTACH.
3. BEFORE JOINING DOOR FIT DOOR CATCH ASSY, P/No. 7029013.
4 DOOR INTERIOR IS FLOCKED ON TO DOOR SKIN.
5. USE CIBA LC3600 EPOXY RESIN
6. MAKE TO PSJED-07
LIMITS +/- 1.0
MATERIAL AS DESCRIBED
DRAWN DM
APPR.
AVTECH P/L
HINKLER AIRPORT
BUNDABERG
TITLE
REAR DOOR ASSY J200/J400
SCALE 1:8
DS 2 8/8/05
1 25/03/04
ISS. DATE
DWG. No. 1157023-2
SHEET 1 OF 1

Figure 6: Rear Door Assembly

4.3.2 ADJUSTMENT

Cabin doors should be adjusted so that the door skin fairs with the fuselage skin.

4.3.3 DOOR SEALS

A weather strip is glued around all edges of the door. Apart from excluding wind and water, the weather strip is important in minimising exhaust fume entry to the cabin. It should be maintained in good condition and fit at all times. New weather strip may be applied after mating surfaces of weather strip and door are clean, dry and free from oil and grease.

3.1.1 Cabin Door Latches

There is one main latch on each door of a simple spring type. This is complemented by a catch at the top front quadrant of each door. An assembly drawing of the latch mechanism is provided as Figure 7 below.

Door latches or their component parts must be replaced if worn or damaged.

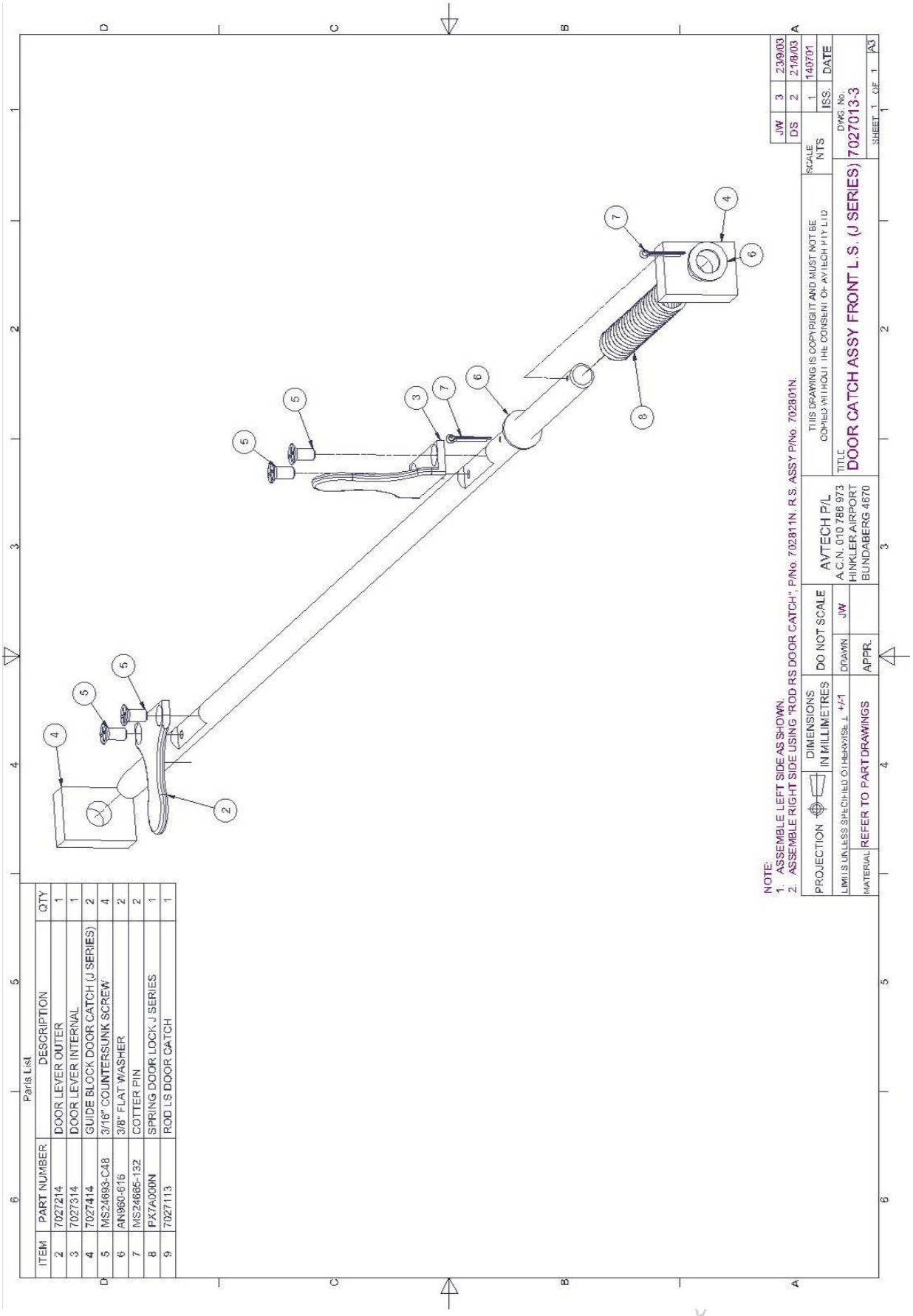

Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
2 | 7027214 | DOOR LEVER OUTER | 1
3 | 7027314 | DOOR LEVER INTERNAL | 1
4 | 7027414 | GUIDE BLOCK DOOR CATCH (J SERIES) | 2
5 | MS24693-C48 | 3/16" COUNTERSUNK SCREW | 4
6 | AN960-616 | 3/8" FLAT WASHER | 2
7 | MS24665-132 | COTTER PIN | 2
8 | PX7A000N | SPRING DOOR LOCK J SERIES | 1
9 | 7027113 | ROD LS DOOR CATCH | 1
NOTE:
1. ASSEMBLE LEFT SIDE AS SHOWN
2. ASSEMBLE RIGHT SIDE USING "ROD RS DOOR CATCH", P/No. 7028111N. R.S. ASSY P/No. 7028011N.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
DRAWN JW
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
TITLE
DOOR CATCH ASSY FRONT L.S. (J SERIES)
SCALE NTS
DWG No. 7027013-3
SHEET 1 OF 1 A3
ISS. DATE
JW 3 23/9/03
DS 2 21/8/03
1 140701

Figure 7. Door Latch Mechanism Assembly

4.3.4 LOCKS

An optional cylinder and key lock is available. When fitted, the keyed barrel lock is located in the fuselage at the rear of the Port, Starboard & Rear doors. Spare keys are available to JABIRU registered owners by quoting the aircraft Serial Number.

4.4 SEATS

The JABIRU seats are an integral part of the structure of the aircraft; they are therefore fixed in position. Forward and upward adjustment can be achieved by placing a cushion behind and/or under the occupant. The seat pans incorporate crushable foam which is essential in providing shock absorption in crash conditions. The seat backs are also essential to restrain baggage in crash conditions.

WARNING
DO NOT MODIFY SEATS.

4.4.1 REPAIR

As seats are integral to the aircraft structure, any repair must be referred to JABIRU AIRCRAFT Pty Ltd or our local approved representative.

4.5 UPHOLSTERY

Seat upholstery is provided through slip-on covers. These are easily removed for cleaning and inspection of the seat structures. Note that the seat covers are treated with a flame retardant which must be re-applied after every 5 washes.

Optional Hood and Cabin lining is available, together with Door Pockets.

4.5.1 UPHOLSTERY CLEANING – FLAME RETARDANT

The upholstery used in the J230-C has been treated with a flame retardant to meet the flammability requirements of LSA. This treatment will withstand 5 washes or dry cleans before requiring re-application. The washing of cabin upholstery must be noted in the aircraft's maintenance log book and the flame retardant re-applied by an authorized person after 5 washes.

4.6 SOUNDPROOFING

A curtain of soundproofing material is used at the rear of the cockpit/baggage area. This curtain is attached to the forward rib of the fuselage using velcro straps. Its purpose is to minimise drumming of the fuselage as well as restricting material falling aft of the curtain and resulting in a severe aft centre of gravity condition. The curtain should be in place for all flights.

4.7 SAFETY PROVISIONS

4.7.1 SEATBELTS

Aircraft grade Seatbelts, bolted to the fuselage structure, are provided for both seats. Belts should be replaced if frayed or cut, latches are defective or stitching is broken. Attaching parts should be replaced with equivalent parts if excessively worn or defective.

5 SECTION 5 – Wings And Empennage

5.1 WINGS

Refer to Figures 8 and 9.

Each composite wing is a semi-cantilever, monocoque type with a main spar. The wing is a moulded structure with a series of ribs that are bonded through the moulding process to the fibreglass skin, fuel tanks and to the spar.

The forward wing attachment is an extension of the forward sub-spar. The rear attachment is an extension of the rear sub-spar (also know as the wing attachment lug or fork). Both wing attachments are contained in a reinforced Wing End Plug and bond to the wing skins. The Wing End Plug distributes load from the attachments to the main spar. Both attachments are through stainless steel threaded bushes bonded into the attachment blocks.

5.1.1 REMOVAL

The JABIRU aircraft is designed with wings which are removable for storage or transport.

Wing removal is most easily achieved if two persons are available to handle the wing.

1. Remove wing root fairings.
2. Drain Fuel out of Quick Drain (Note: This will take some time)
3. Remove wing strut fairings – top and bottom.
4. Disconnect Pitot tube – RH wing only.
5. Unbolt flap control rods – 1 each wing.
6. Remove flap from wing so it does not crush the fuselage when lowering down.
7. Unbolt aileron control cables (2) from rear of control stick horn inside cabin.
8. Remove pin and clamp block from aileron control cable clamps at rear of seat – 1 each seat.
9. Loosen hose clamps from fuel lines & breather tubes between the wing & fuselage.
10. Disconnect fuel gauge sender electrical wires.
11. With one person supporting wing tip, unbolt top wing strut bolt and lower wing strut to the ground.
12. Lower wing tip to towards the ground making sure you do not crush the under side of the wing on the fuselage wing root. Rest the wing tip on a saw-horse or other suitable stand.

13. Unbolt and remove front wing attachment bolt.

14. Unbolt and remove rear wing attachment bolt.
Note: It may be necessary to rock the wing slightly while pulling attaching bolt, or carefully use a long drift punch to drive out attaching bolt.

15. Carefully remove wing by moving it out to clear the aileron cable from the fuselage.

16. Place wing on cushioned structure to avoid damage to wing strut attachment.

17. Unbolt lower wing strut bolt and remove wing strut.

18. Repeat Steps 5 – 16 to remove other wing.

5.1.2 REPAIR

The wing is a composite monocoque structure. All repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

5.1.3 INSTALLATION

1. Fit the lower strut attaching bolt, leaving the top end of the strut on the ground.

WARNING

Do Not Tighten nut or metal fatigue may result. Washer must be free to rotate.

2. Fit wing to fuselage, leaving wing tip on the saw-horse and routing aileron cable through hole in fuselage wing root.

3. Install front and rear wing attaching bolts/nuts.

4. Put top wing strut attaching bolt in your pocket.

5. Lift wing tip and install wing strut to wing strut attachment with bolt from pocket. Install nut.

WARNING

Do Not Tighten nut or metal fatigue may result. Washer must be free to rotate.

6. Connect all fuel lines to wing. Connect wires to fuel gauge sender

WARNING

Ensure no fuel or breather lines are kinked.

7. Put about 10lts of fuel in each tank & check for any leaks.

8. Attach flap to wing ensuring all bushes are in place.

9. Install bolt/nut in flap control rod.

10. Install bolt/nut in aileron control cable on main control stick horn.

11. Install clamp block and pin in aileron control cable clamp at rear of seat.

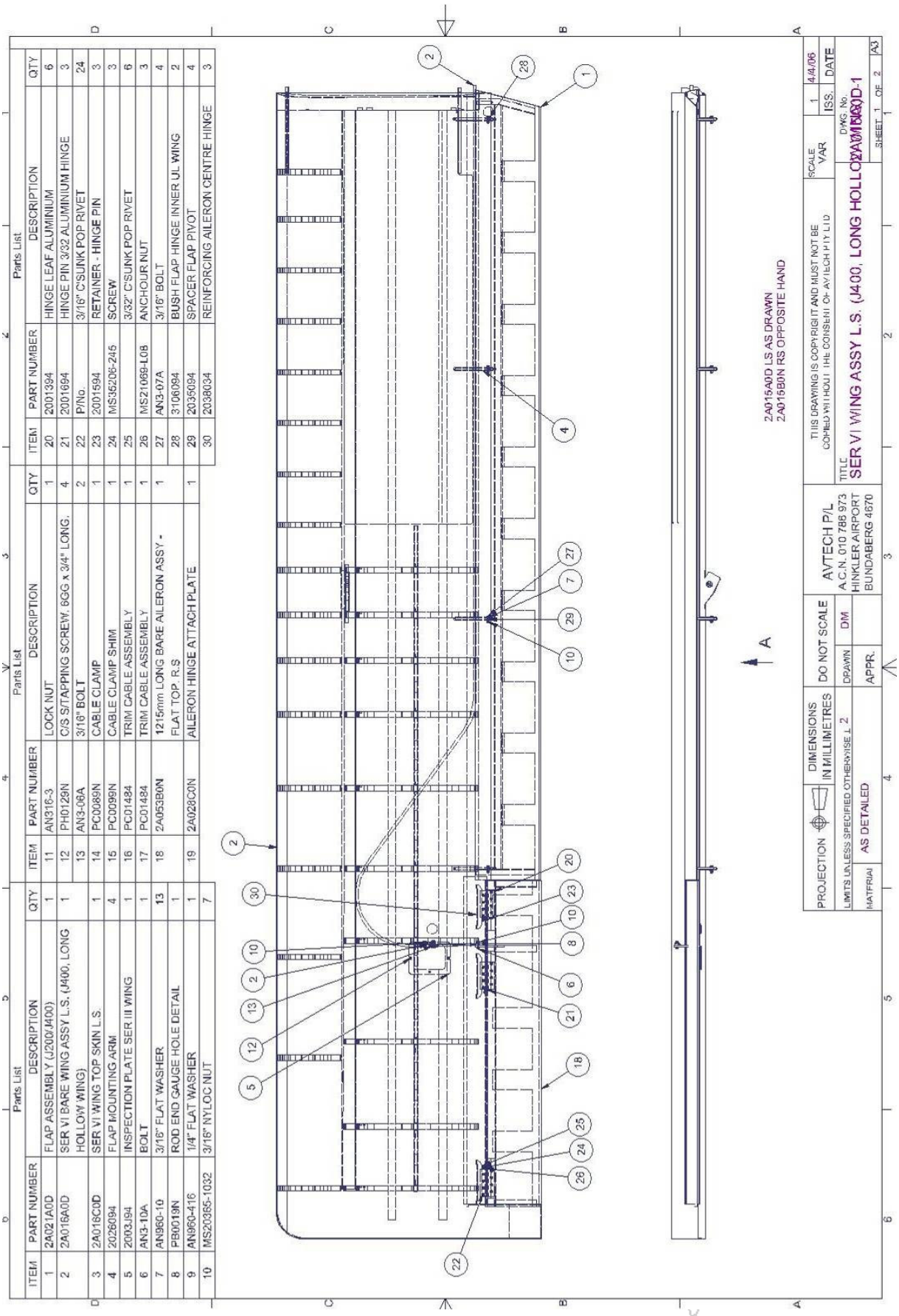
12. On RH wing, reconnect Pitot tube.

13. Replace wing strut fairings – top and bottom.

14. Replace wing root fairings.

15. Perform a fuel flow test. Disconnect the fuel line from the mechanical fuel pump in the engine compartment. Have a second person catch any fuel that flows out of the line in a container with accurate volume marks. Turn electric fuel pump on and pump fuel through the lines into container. Ensure there is about 1 litre per minute flow rate.

NOTE: After carrying out the fuel flow test, check that both wing tanks are feeding fuel by blocking fuel from both wing tanks, pumping about a litre out of the header tank, then allowing fuel to flow from the left wing. The wing tank will gravity feed to the header tank, and it should re-fill within approximately 1-2 minutes. This must be repeated for the right wing. If a wing is not flowing correctly, check lines for kinks, blockages & airlocks.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 2A021A0D | FLAP ASSEMBLY (J200/J400) | 1
2 | 2A016A0D | SER VI BARE WING ASSY L.S. (J400, LONG HOLLOW WING) | 1
3 | 2A016C0D | SER VI WING TOP SKIN L.S. | 1
4 | 2026094 | FLAP MOUNTING ARM | 4
5 | 2003J94 | INSPECTION PLATE SER III WING | 1
6 | AN3-10A | BOLT | 1
7 | AN960-10 | 3/16" FLAT WASHER | 13
8 | PB0019N | ROD END GAUGE HOLE DETAIL | 1
9 | AN960-416 | 1/4" FLAT WASHER | 1
10 | MS20365-1032 | 3/16" NYLOC NUT | 7
11 | AN316-3 | LOCK NUT | 1
12 | PH0129N | C/S S/TAPPING SCREW, 6GG x 3/4" LONG. | 4
13 | AN3-06A | 3/16" BOLT | 2
14 | PC0089N | CABLE CLAMP | 1
15 | PC0099N | CABLE CLAMP SHIM | 1
16 | PC01484 | TRIM CABLE ASSEMBLY | 1
17 | PC01484 | TRIM CABLE ASSEMBLY | 1
18 | 2A053B0N | 1215mm LONG BARE AILERON ASSY - FLAT TOP, R.S | 1
19 | 2A028C0N | AILERON HINGE ATTACH PLATE | 1
20 | 2001394 | HINGE LEAF ALUMINIUM | 6
21 | 2001694 | HINGE PIN 3/32 ALUMINIUM HINGE | 3
22 | P/No. | 3/16" C'SUNK POP RIVET | 24
23 | 2001594 | RETAINER - HINGE PIN | 3
24 | MS362O6-245 | SCREW | 3
25 | | 3/32" C'SUNK POP RIVET | 6
26 | MS21069-L08 | ANCHOUR NUT | 3
27 | AN3-07A | 3/16" BOLT | 4
28 | 3106094 | BUSH FLAP HINGE INNER UL WING | 2
29 | 2035094 | SPACER FLAP PIVOT | 4
30 | 2038034 | REINFORCING AILERON CENTRE HINGE | 3
2A015A0D LS AS DRAWN
2A015B0N RS OPPOSITE HAND
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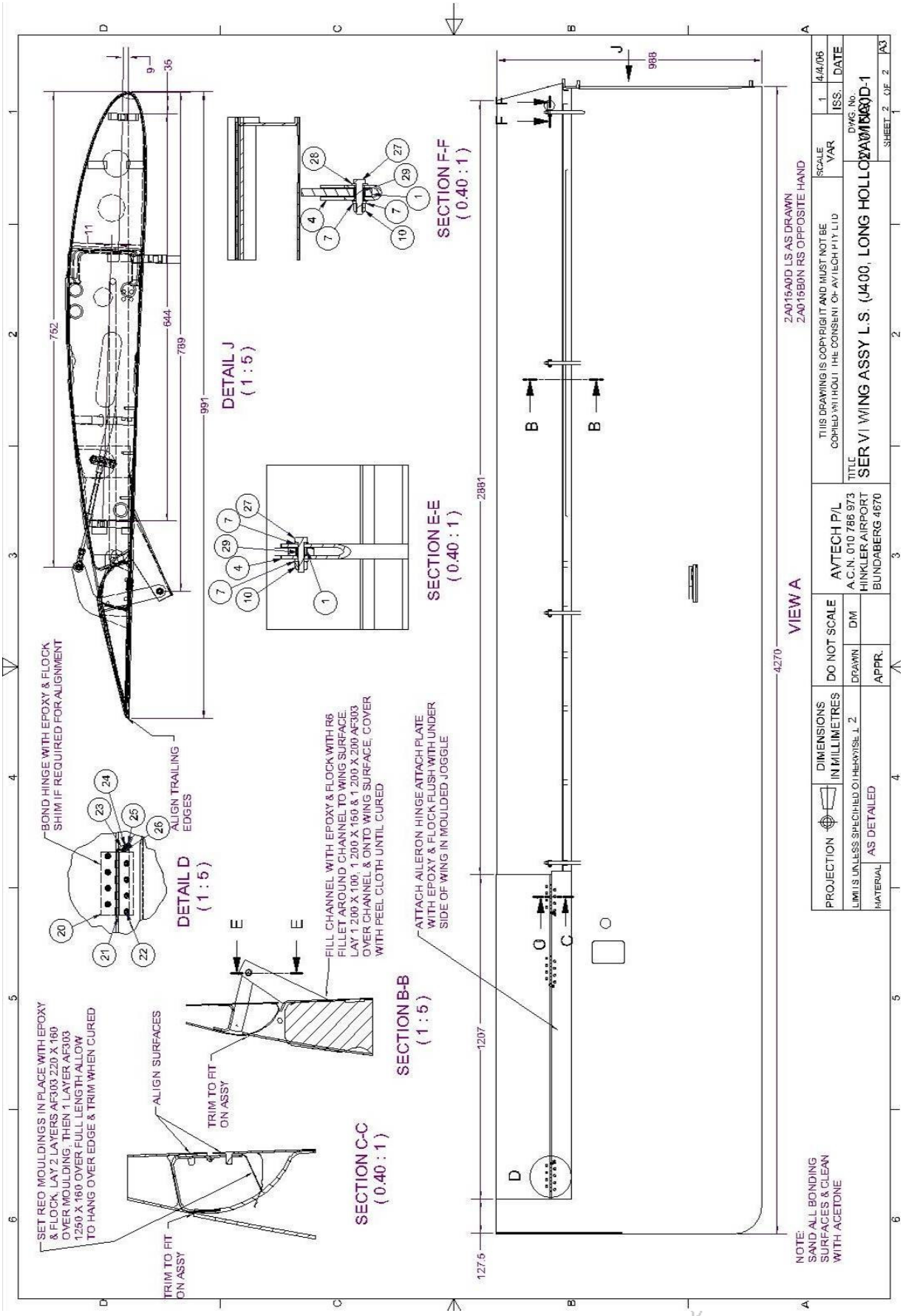
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
DRAWN DM
APPR.
LIMITS UNLESS SPECIFIED OTHERWISE ± 2
MAT'L/FIAI AS DETAILED
TITLE
SER VI WING ASSY L.S. (J400, LONG HOLLOW)
SCALE VAR
ISS. 1 4/4/06
DATE
DWG No. 2A016A0D-1
SHEET 1 OF 2 A3

Figure 8. J230 Wing Assembly Sheet 1


SECTION F-F (0.40 : 1)
DETAIL J (1 : 5)
SECTION E-E (0.40 : 1)
DETAIL D (1 : 5)
SECTION B-B (1 : 5)
SECTION C-C (0.40 : 1)
VIEW A
BOND HINGE WITH EPOXY & FLOCK SHIM IF REQUIRED FOR ALIGNMENT
ALIGN TRAILING EDGES
FILL CHANNEL WITH EPOXY & FLOCK WITH R6 FILLET AROUND CHANNEL TO WING SURFACE. LAY 1 200 X 100, 1 200 X 150 & 1 200 X 200 AF303 OVER CHANNEL & ONTO WING SURFACE. COVER WITH PEEL CLOTH UNTIL CURED
ATTACH AILERON HINGE ATTACH PLATE WITH EPOXY & FLOCK FLUSH WITH UNDER SIDE OF WING IN MOULDED JOGGLE
SET REO MOULDINGS IN PLACE WITH EPOXY & FLOCK. LAY 2 LAYERS AF303 220 X 160 OVER MOULDING, THEN 1 LAYER AF303 1250 X 160 OVER FULL LENGTH ALLOW TO HANG OVER EDGE & TRIM WHEN CURED
ALIGN SURFACES
TRIM TO FIT ON ASSY
TRIM TO FIT ON ASSY
NOTE: SAND ALL BONDING SURFACES & CLEAN WITH ACETONE
2A015A0D LS AS DRAWN
2A015B0N RS OPPOSITE HAND
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SCALE VAR
DWG. No. 2A0150D-1
SHEET 2 OF 2
A3
ISS. 1 4/4/06
DATE
TITLE SERVI WING ASSY L.S. (J400, LONG HOLLOW)
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
UNLESS SPECIFIED OTHERWISE
DRAWN DM
APPR.
MATERIAL AS DETAILED
752
644
789
991
988
2881
4270
1207
127.5

Figure 9. J230 Wing Assembly Sheet 2

5.2 WING STRUTS

Each wing strut is a single lift strut which transmits a part of the wing load to the lower portion of the fuselage. The strut consists of a streamlined tube bolted to two end fittings which attach to the fuselage and wing.

WARNING

Do Not Tighten Strut Attachment Bolts. Metal fatigue may result. Bolt must be free to rotate.

5.2.1 REMOVAL AND INSTALLATION

See Wing Removal (Paragraph 5.1.1) and Wing Installation (Paragraph 5.1.3).

5.2.2 REPAIR

Wing struts are structural components and therefore all repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

A dented, cracked or deformed wing strut should be replaced prior to next flight.

5.3 PITOT PROBE

5.3.1 DESCRIPTION

Where equipped, the EFIS can use a special Pitot probe which also incorporates an angle of attack sensor. The probe is mounted on a special mount rather than off the wing strut as normal for the J230-C. Details of the probe's installation are given in Figure 10 below.

Note that this probe incorporates water drain holes for flying in rain and must be removed before leak testing the pitot system.

5.3.2 PITOT REMOVAL & INSTALLATION

1. Un-screw the pitot mount from the wing strut fairing.

2. Disconnect the pitot & angle of attack hoses. Ensure both ends are marked to avoid confusion on re-assembly.

3. Assembly is the reverse of the above.

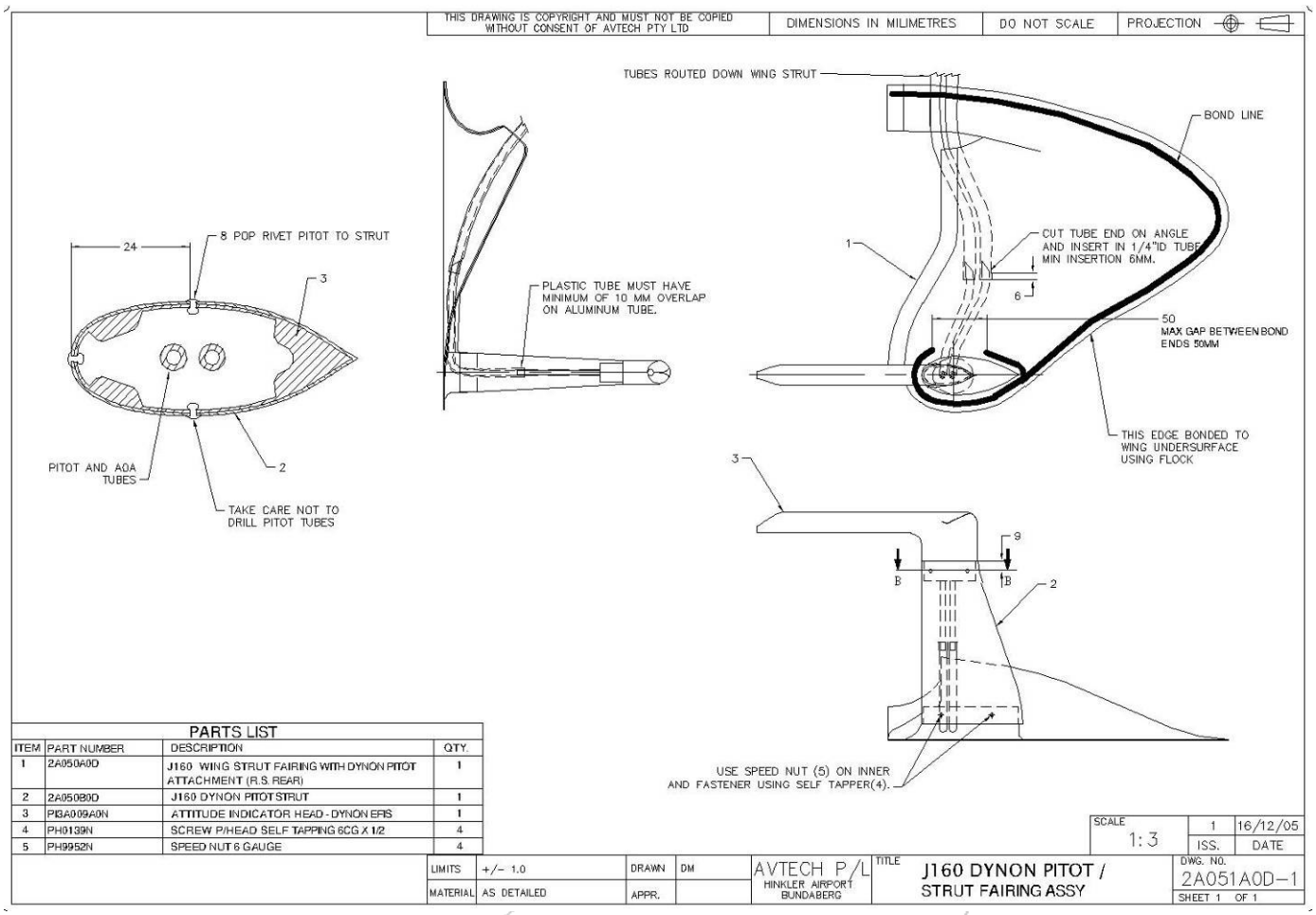

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
TUBES ROUTED DOWN WING STRUT
BOND LINE
24
8 POP RIVET PITOT TO STRUT
3
PLASTIC TUBE MUST HAVE MINIMUM OF 10 MM OVERLAP ON ALUMINUM TUBE.
1
CUT TUBE END ON ANGLE AND INSERT IN 1/4"ID TUBE MIN INSERTION 6MM.
6
50
MAX GAP BETWEEN BOND ENDS 50MM
THIS EDGE BONDED TO WING UNDERSURFACE USING FLOCK
PITOT AND AOA TUBES
2
TAKE CARE NOT TO DRILL PITOT TUBES
3
9
B
B
2
USE SPEED NUT (5) ON INNER AND FASTENER USING SELF TAPPER(4).
PARTS LIST
ITEM | PART NUMBER | DESCRIPTION | QTY.
1 | 2A050A0D | J160 WING STRUT FAIRING WITH DYNON PITOT ATTACHMENT (R.S. REAR) | 1
2 | 2A050B0D | J160 DYNON PITOT STRUT | 1
3 | PIGA009A0N | ATTITUDE INDICATOR HEAD - DYNON EFIS | 1
4 | PH0139N | SCREW P/HEAD SELF TAPPING 6CG X 1/2 | 4
5 | PH9952N | SPEED NUT 6 GAUGE | 4
SCALE 1:3
1
ISS.
16/12/05
DATE
LIMITS +/- 1.0
MATERIAL AS DETAILED
DRAWN DM
APPR.
AVTECH P/L
HINKLER AIRPORT
BUNDABERG
TITLE
J160 DYNON PITOT / STRUT FAIRING ASSY
DWG. NO. 2A051A0D-1
SHEET 1 OF 1

Figure 10 – Dynon Pitot Probe Installation

5.4 LANDING LIGHT (OPTION)

5.4.1 DESCRIPTION

A landing light may be fitted to the wing strut as an option (refer to Figure 11).

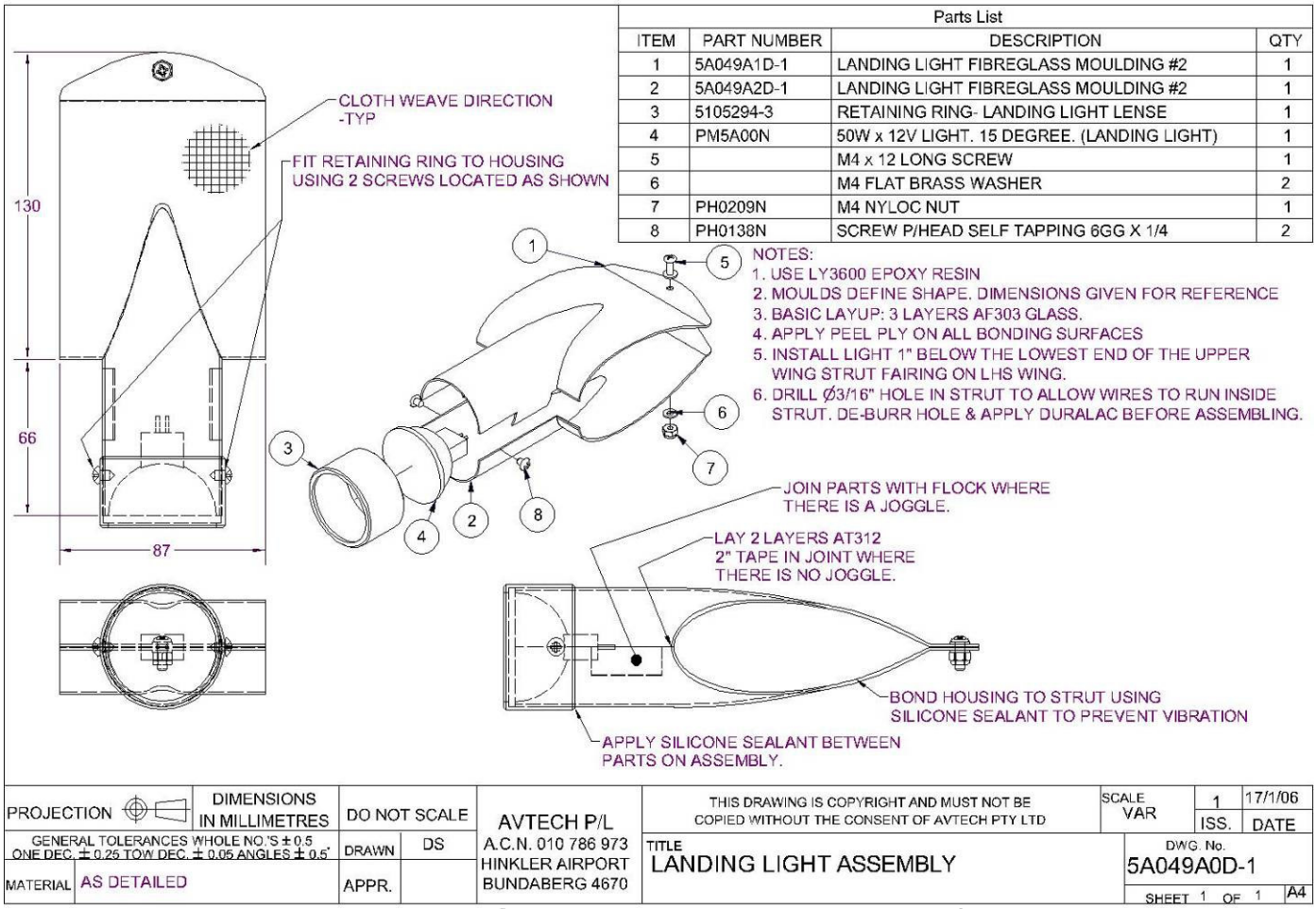
5.4.2 LANDING LIGHT REMOVAL & INSTALLATION

1. Remove the screw holding the lens retainer to the light mount & remove the retainer & lens from the housing.

2. Un-screw the clamp screw at the rear of the light assembly.

3. Remove the housing from the strut.

4. Assembly is the reverse of the above. Note the application of silicone sealant to prevent vibration as detailed in Figure 11 below.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 5A049A1D-1 | LANDING LIGHT FIBREGLASS MOULDING #2 | 1
2 | 5A049A2D-1 | LANDING LIGHT FIBREGLASS MOULDING #2 | 1
3 | 5105294-3 | RETAINING RING- LANDING LIGHT LENSE | 1
4 | PM5A00N | 50W x 12V LIGHT. 15 DEGREE. (LANDING LIGHT) | 1
5 | | M4 x 12 LONG SCREW | 1
6 | | M4 FLAT BRASS WASHER | 2
7 | PH0209N | M4 NYLOC NUT | 1
8 | PH0138N | SCREW P/HEAD SELF TAPPING 6GG X 1/4 | 2
CLOTH WEAVE DIRECTION -TYP
FIT RETAINING RING TO HOUSING USING 2 SCREWS LOCATED AS SHOWN
130
66
87
NOTES:
1. USE LY3600 EPOXY RESIN
2. MOULDS DEFINE SHAPE. DIMENSIONS GIVEN FOR REFERENCE
3. BASIC LAYUP: 3 LAYERS AF303 GLASS.
4. APPLY PEEL PLY ON ALL BONDING SURFACES
5. INSTALL LIGHT 1" BELOW THE LOWEST END OF THE UPPER WING STRUT FAIRING ON LHS WING.
6. DRILL Ø3/16" HOLE IN STRUT TO ALLOW WIRES TO RUN INSIDE STRUT. DE-BURR HOLE & APPLY DURALAC BEFORE ASSEMBLING.
JOIN PARTS WITH FLOCK WHERE THERE IS A JOGGLE.
LAY 2 LAYERS AT312 2" TAPE IN JOINT WHERE THERE IS NO JOGGLE.
BOND HOUSING TO STRUT USING SILICONE SEALANT TO PREVENT VIBRATION
APPLY SILICONE SEALANT BETWEEN PARTS ON ASSEMBLY.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
GENERAL TOLERANCES WHOLE NO.'S ± 0.5 ONE DEC. ± 0.25 TOW DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL AS DETAILED
DRAWN DS
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
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SCALE VAR
ISS. 1
DATE 17/1/06
TITLE LANDING LIGHT ASSEMBLY
DWG. No. 5A049A0D-1
SHEET 1 OF 1
A4

Figure 11 – Landing Light Assembly

5.5 FIN

The Fin is a moulded composite structure supported by ribs and a rear spar. Hinges attach the rear spar to the rudder.

5.5.1 REMOVAL, INSTALLATION, INSPECTION AND REPAIR

The fin is an integral part of the fuselage structure and cannot be removed.
All repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

5.6 HORIZONTAL STABILISER

The horizontal stabiliser is a moulded monocoque structure of rigid cellular polystyrene bonded to a fibreglass skin and rear spar.

5.6.1 REMOVAL AND INSTALLATION

The horizontal stabiliser is an integral part of the fuselage to which it is bonded. It cannot be removed.

All repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local representative.

6 SECTION 6 – LANDING GEAR and BRAKES

6.1 LANDING GEAR

Main gear comprises two separate composite beams which are bolted to the fuselage at the top and centre and to the wheel stub at the bottom.

The nose gear is a welded steel, trailing arm assembly with a rubber spring system. The nose wheel is steerable with the rudder pedals.

Nose Wheel and Main Wheel Speed Fairings (wheel spats) are optional equipment.

6.2 TROUBLE SHOOTING – MAIN UNDERCARRIAGE

Table 5. Trouble Shooting – Main Undercarriage

Trouble	Probable Cause	Remedy
Aircraft leans to one side	Incorrect tyre inflation	Inflate to pressure shown at above
	Landing gear attaching parts not tight	Tighten loose parts. Replace defective parts.
	Bent axle stubs	Install new part(s)
Tyres wear excessively	Incorrect tyre inflation	Inflate to pressure shown in above
	Main wheels out of alignment	Align as specified above
	Bent axle stubs	Install new part (s)
	Dragging Brakes	Refer to Para. 6.8

6.3 MAIN GEAR

Figures 12, 15 an 14 illustrate the main landing gear. The illustrations should be used in conjunction with the following procedures during removal and installation of component parts.

WARNING: Check looseness of main U/C beams by lifting each wing and trying to move beam back and forth. If movement, tighten clamp bolts (2) evenly to take beam movement out. Do not over tighten or exceed 3 threads clear on the nuts (use extra washers). Over tightening can cause bolt fracture and failure to tighten both can also cause bolt failure. (See Torque Value Figure 1-2).

The wheels comprise two wheel halves which are assembled as shown in Figure 15. During assembly of the main wheels the through-bolts/nuts should be tightened to the value specified in Table 2.

The assembly of the wheels to the undercarriage leg is shown in Figure 14.

6.3.1 REMOVAL

The following procedural steps remove one side of the landing gear as a complete assembly. Refer to applicable paragraphs for removal of the individual components.

1. Jack the aircraft in accordance with the details given in Section 3.

2. Unbolt wheel end of flexible brake hose – catching brake fluid in a container.

3. Remove bolt/nut from top inboard end of undercarriage beam. Remove rubber bushes (2).

4. Remove bolts/nuts (2) from the clamp at bend in undercarriage beam.

5. Remove clamp.

6. Remove Undercarriage Leg Assembly.

6.3.2 INSTALLATION

The following procedural steps install the landing gear as a complete assembly. Refer to applicable paragraphs for installation of the individual components.

With aircraft jacked:

1. Offer the beam to the fuselage and install clamp and bolts/nuts (2 OFF) – Do not tighten at this stage.

2. Locate top end bolt, install and tighten nut (See Torque Value in Table 2).

3. Tighten clamp bolts/nuts (2 OFF) (See Torque Value in Table 2).

4. Connect flexible brake line.

5. Top-up brake master cylinder with fresh brake fluid and bleed brakes – see Paragraph 6.8.5.

6. Lower aircraft

6.3.3 INSPECTION AND REPAIR

1. Inspect composite beam for damage indicated by cracks or delamination. Pay particular attention to the area around the centre bend and to areas around drilled holes.

2. Inspect bolts and nuts for signs of stress or bending – replace if in any doubt.

3. Inspect clamp for damage.

4. Inspect bolt seats in fuselage for signs of damage, wear or perishing.
   Repairs to the composite undercarriage beams must be referred to JABIRU AIRCRAFT Pty Ltd or our local approved agent.

6.3.4 MAIN WHEEL FAIRING REMOVAL AND INSTALLATION

1. Remove the machine screws around the join of the inner and outer sections of the fairing.

2. Remove the bolt on the outside of the fairing.

3. Remove the machine screws (2 OFF) on the inboard side of the leg.

4. Reverse the preceding steps for installation.

6.3.5 MAIN GEAR TOP FAIRING REMOVAL AND INSTALLATION

The fairing at the top of the main undercarriage leg is removed by removing the securing screws.

To install, reverse this procedure.

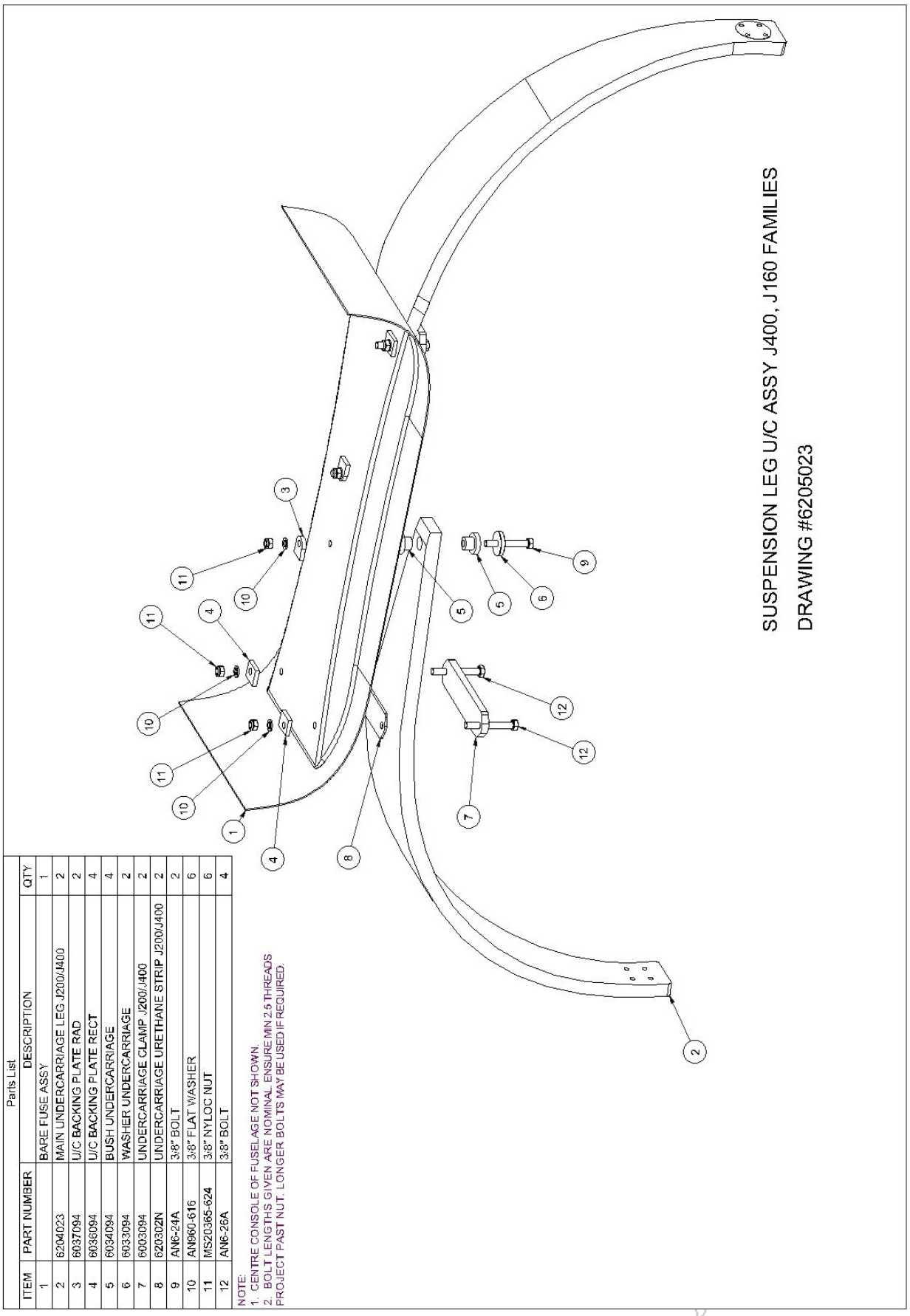

SUSPENSION LEG U/C ASSY J400, J160 FAMILIES
DRAWING #6205023
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | | BARE FUSE ASSY | 1
2 | 6204023 | MAIN UNDERCARRIAGE LEG J200/J400 | 2
3 | 6037094 | U/C BACKING PLATE RAD | 2
4 | 6036094 | U/C BACKING PLATE RECT | 4
5 | 6034094 | BUSH UNDERCARRIAGE | 4
6 | 6033094 | WASHER UNDERCARRIAGE | 2
7 | 6003094 | UNDERCARRIAGE CLAMP J200/J400 | 2
8 | 6203021N | UNDERCARRIAGE URETHANE STRIP J200/J400 | 2
9 | AN6-24A | 3/8" BOLT | 2
10 | AN960-616 | 3/8" FLAT WASHER | 6
11 | MS20365-624 | 3/8" NYLOC NUT | 6
12 | AN6-26A | 3/8" BOLT | 4
NOTE:
1. CENTRE CONSOLE OF FUSELAGE NOT SHOWN.
2. BOLT LENGTHS GIVEN ARE NOMINAL. ENSURE MIN 2.5 THREADS PROJECT PAST NUT. LONGER BOLTS MAY BE USED IF REQUIRED.

Figure 12. Main Undercarriage Assembly

6.4 MAIN WHEEL

Refer to Figure 14

6.4.1 MAIN WHEEL REMOVAL

1. Jack aircraft as outlined in Section 3.1.2 above.

2. Remove speed fairing, if installed, in accordance with paragraph 6.3.4.

3. Remove outboard brake pad plate.

4. Remove lock bolt/nut through centre of axle and spacer.

5. Remove lock spacer.

6. Pull wheel from axle.

6.4.2 MAIN WHEEL DISASSEMBLY

1. Deflate tyre and break tyre beads loose from tyre rims.

WARNING

Injury can result from attempting to separate wheel halves with the tyre inflated. Avoid damaging wheel flanges when breaking beads loose as a scratch, nick or gouge may cause wheel failure.

2. Remove through-bolts/nuts and separate wheel halves, removing tyre, tube and wheel hub.

3. Remove brake disc.

4. Remove bearings from hub.

NOTE:

The bearing are “press-fit” in the wheel hub and should not be removed unless a new part is to be installed.

6.4.3 MAIN WHEEL INSPECTION, ASSEMBLY AND REPAIR

1. Clean all metal parts in solvent and dry thoroughly.

2. Inspect wheel halves for cracks. Cracked wheel halves should be discarded and new parts used. Sand out nicks, gouges and corroded areas.

3. If excessively warped or scored or worn to a thickness of 2 mm, brake discs should be replaced with a new part. Sand smooth small nicks and scratches.

4. Carefully inspect bearings for damage and discolouration.

NOTE:

Bearings are pre-packed. **DO NOT** clean with solvents as it will remove the packing.

5. Replace bearings.

6. Apply automotive wheel rim lubricant to the bead areas of the rim halves. Note that If this step is missed, disassembly of the wheels in future will be very much harder.

7. Position tyre and tube between wheel halves with tube inflation valve through hole in outside wheel half.

8. Mate wheel halves. While holding halves together, assemble a washer and nut on one through-bolt and tighten snugly. Assemble the remaining washers and nuts on the through-bolts and torque to the value specified in Table 2.

CAUTION

Ensure tube is not pinched between wheel halves during assembly. Uneven or improper torque of through-bolt nuts can cause failure of bolts with resultant wheel failure.

9. Insert through-bolts through brake disc and position disc on the inner wheel hub flange. Note that if directional brake discs are fitted, the discs must be oriented in for the correct direction of rotation. Refer to Figure 16 below.

10. Inflate tyre to seat tyre beads, then adjust to correct tyre pressure – Refer Aircraft Specifications above.

6.4.4 MAIN WHEEL INSTALLATION

1. Lightly coat axle with “Anti Sieze” or a Water Proof grease.

2. Place wheel assembly on axle.

3. Install spacer and lock bolt/nut through centre of axle.

4. Place outboard brake pad plate and springs in position and secure with bolts/nuts/washers.

5. Reconnect flexible brake line.

6. Refill brake master cylinder with fresh brake fluid.

7. Bleed brakes – Refer to Section 6.8.5.

8. Install speed fairing (if used) as outlined in Paragraph 6.3.4.

6.4.5 MAIN WHEEL STUB AXLE REMOVAL

1. Remove speed fairing (if installed) in accordance with Paragraph 6.3.4.

2. Remove wheel in accordance with Paragraph 6.4.1.

3. Disconnect flexible brake hose and drain brake fluid.

4. Remove 4 bolts/nuts/washers securing axle to leg.

NOTE:

When removing axle from leg, note number and position of the wheel alignment shims (if any) between the axle flange and composite leg. Mark these shims or tape them together carefully so that they can be installed in exactly the same position, to ensure that wheel alignment is not disturbed.

5. Remove inboard brake plate.

6.4.6 MAIN WHEEL STUB AXLE INSTALLATION

1. Secure axle and inboard brake plate to composite leg, making sure that any wheel alignment shims are installed in their original position.

2. Install wheel assembly on axle in accordance with Paragraph 6.4.4.

6.4.7 MAIN WHEEL ALIGNMENT

Refer to Figure 13.

6.4.8 WHEEL BALANCING

Since uneven tyre wear is usually the cause of tyre imbalance, replacing the tyre will probably correct this condition. If a wheel shows evidence of imbalance during service, it may be statically balanced.

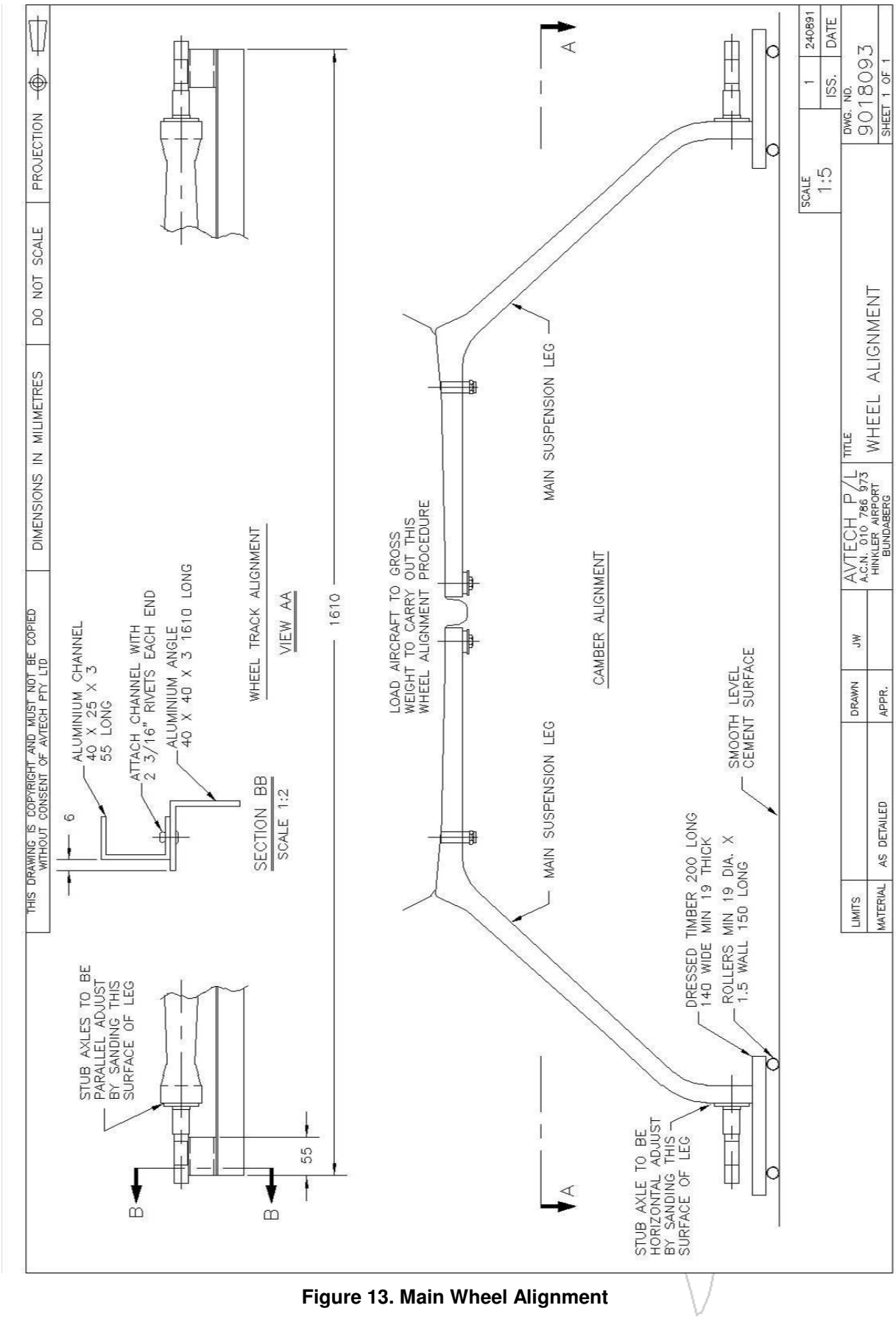
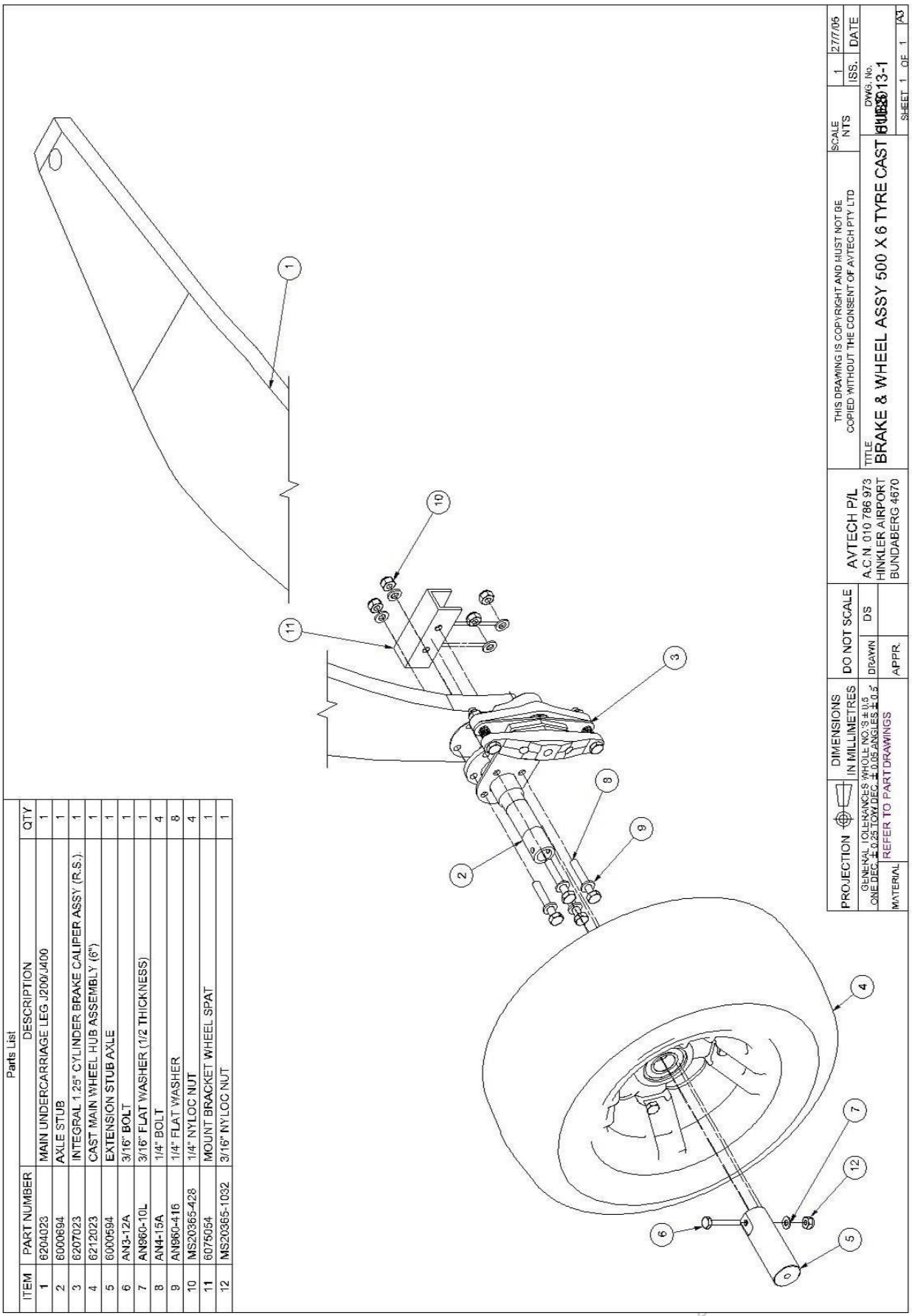


Figure 13. Main Wheel Alignment


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6204023 | MAIN UNDERCARRIAGE LEG J200/J400 | 1
2 | 6000694 | AXLE STUB | 1
3 | 6207023 | INTEGRAL 1.25" CYLINDER BRAKE CALIPER ASSY (R.S.) | 1
4 | 6212023 | CAST MAIN WHEEL HUB ASSEMBLY (6") | 1
5 | 6000594 | EXTENSION STUB AXLE | 1
6 | AN3-12A | 3/16" BOLT | 1
7 | AN960-10L | 3/16" FLAT WASHER (1/2 THICKNESS) | 1
8 | AN4-15A | 1/4" BOLT | 4
9 | AN960-416 | 1/4" FLAT WASHER | 8
10 | MS20365-428 | 1/4" NYLOC NUT | 4
11 | 6075054 | MOUNT BRACKET WHEEL SPAT | 1
12 | MS20365-1032 | 3/16" NYLOC NUT | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
GENERAL TOLERANCES WHOLE NO'S ± 0.5
ONE DEC. ± 0.25 TWO DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL REFER TO PART DRAWINGS
DO NOT SCALE
DRAWN DS
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
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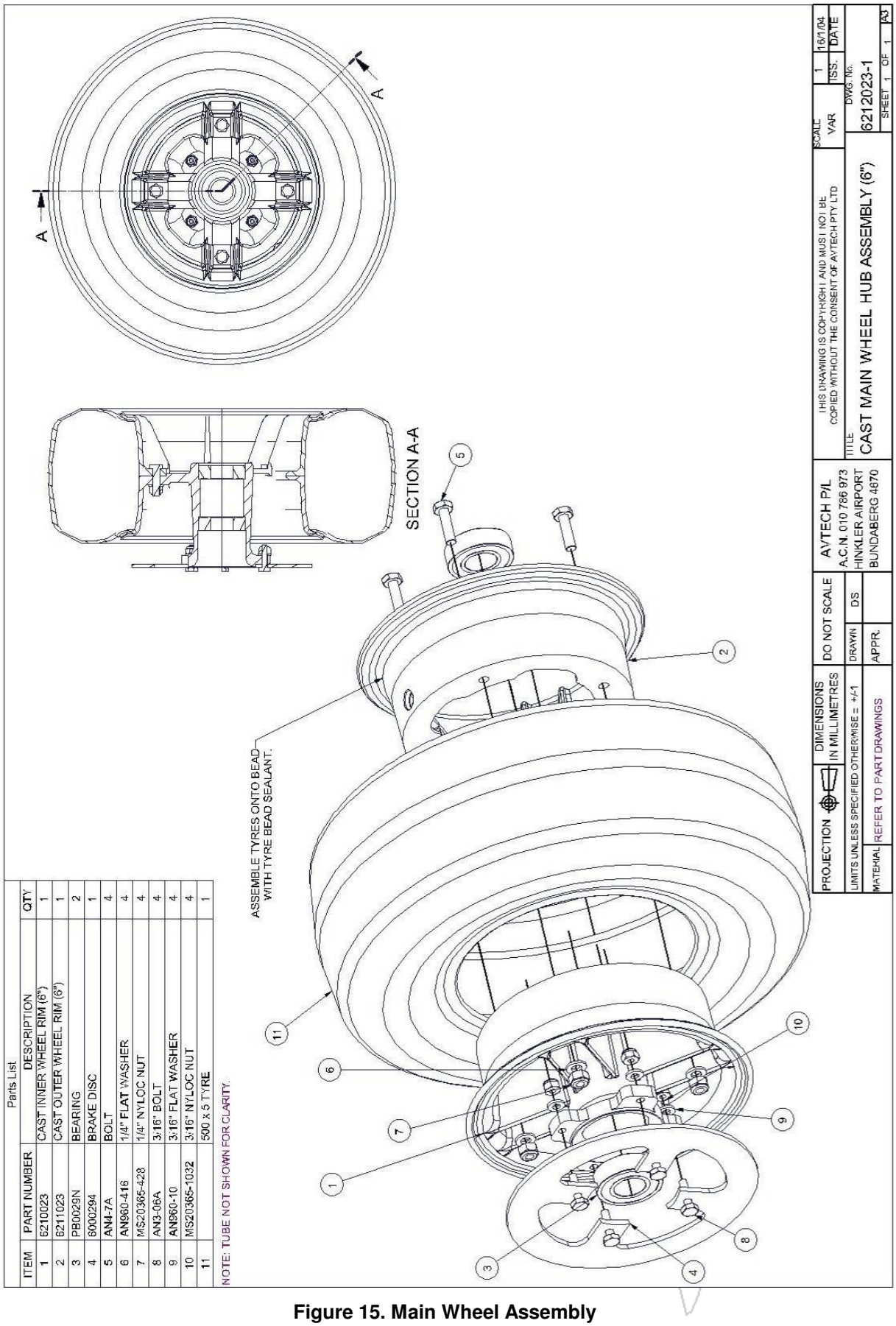
TITLE
BRAKE & WHEEL ASSY 500 X 6 TYRE CAST HUB
SCALE NTS
ISS. 1 27/7/06
DATE
DWG. No. 6013-1
SHEET 1 OF 1 A3

Figure 14. Main Wheel to Leg Assy


A
A
SECTION A-A
ASSEMBLE TYRES ONTO BEAD WITH TYRE BEAD SEALANT.
1
2
3
4
5
6
7
8
9
10
11
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6210023 | CAST INNER WHEEL RIM (6") | 1
2 | 6211023 | CAST OUTER WHEEL RIM (6") | 1
3 | PB0029N | BEARING | 2
4 | 6000294 | BRAKE DISC | 1
5 | AN4-7A | BOLT | 4
6 | AN960-416 | 1/4" FLAT WASHER | 4
7 | MS20365-428 | 1/4" NYLOC NUT | 4
8 | AN3-06A | 3/16" BOLT | 4
9 | AN960-10 | 3/16" FLAT WASHER | 4
10 | MS20365-1032 | 3/16" NYLOC NUT | 4
11 | | 500 x 5 TYRE | 1
NOTE: TUBE NOT SHOWN FOR CLARITY.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE = +/-1
DRAWN DS
MATERIAL REFER TO PART DRAWINGS
APPR.
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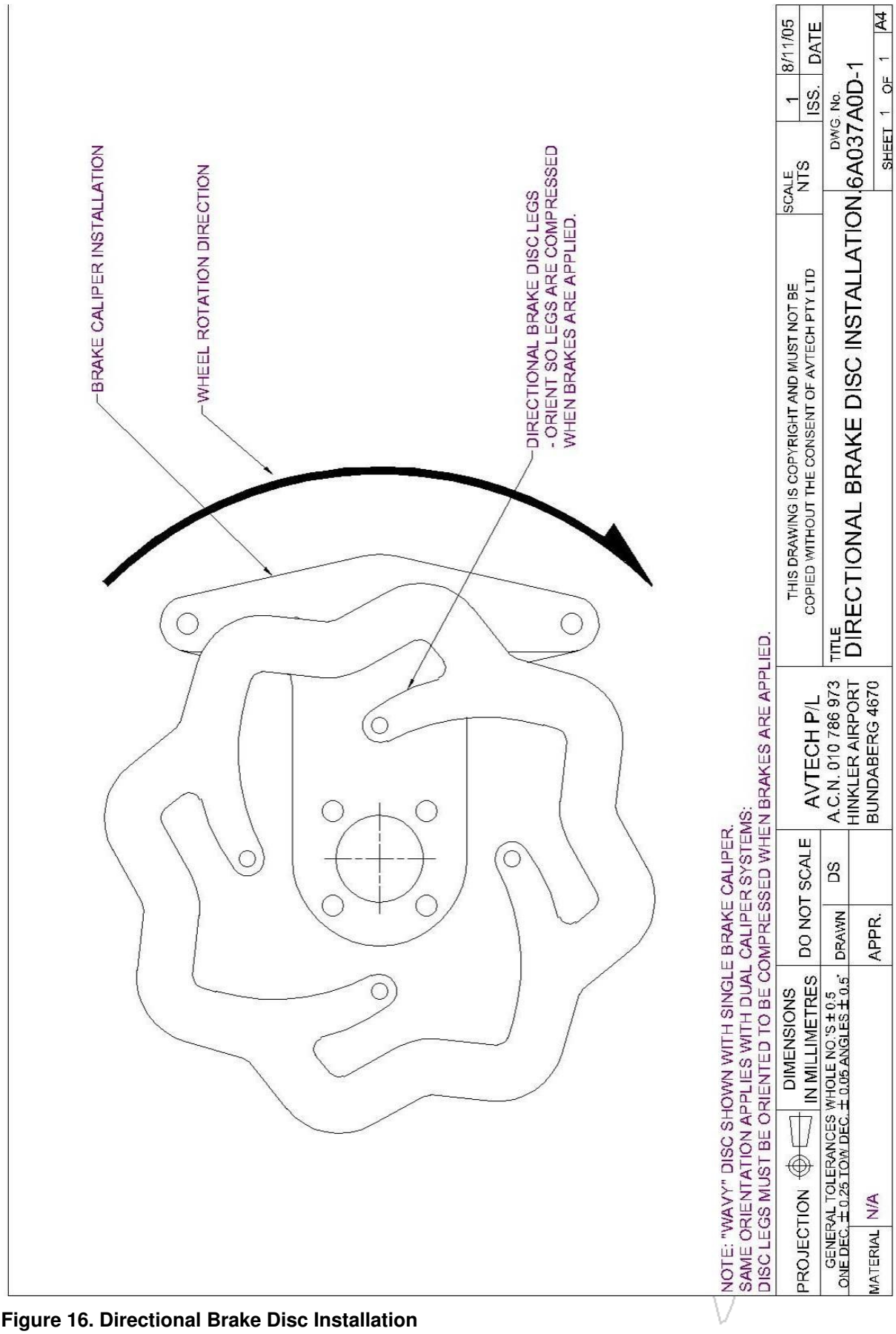
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
TITLE: CAST MAIN WHEEL HUB ASSEMBLY (6")
SCALE: VAR
ISS: 1
DATE: 16/1/04
DWG. No: 6212023-1
SHEET 1 OF 1
A3

Figure 15. Main Wheel Assembly


BRAKE CALIPER INSTALLATION
WHEEL ROTATION DIRECTION
DIRECTIONAL BRAKE DISC LEGS
- ORIENT SO LEGS ARE COMPRESSED
WHEN BRAKES ARE APPLIED.
NOTE: "WAVY" DISC SHOWN WITH SINGLE BRAKE CALIPER.
SAME ORIENTATION APPLIES WITH DUAL CALIPER SYSTEMS:
DISC LEGS MUST BE ORIENTED TO BE COMPRESSED WHEN BRAKES ARE APPLIED.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
GENERAL TOLERANCES WHOLE NO.'S ± 0.5
ONE DEC. ± 0.25 TOW DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL N/A
DRAWN DS
APPR.
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DIRECTIONAL BRAKE DISC INSTALLATION
SCALE NTS
DWG. No. 6A037A0D-1
ISS. 1 8/11/05 DATE
SHEET 1 OF 1 A4

Figure 16. Directional Brake Disc Installation

6.5 NOSE GEAR

The nose gear comprises a steerable nose wheel mounted on a welded steel assembly with an aluminium wheel yoke and a rubber spring system.

The steel tube is constrained within two Ertalite bushes mounted in an aluminium housing which is attached to the front of the firewall.

Nose wheel steering is achieved by connecting the rudder pedal assembly to the nose wheel steering link by push rods. The nosewheel is centred by springs.

A nose wheel speed fairing (wheel spat) is standard equipment.

Disassembly, inspection, repair and reassembly of the nose wheel assembly are described in separate paragraphs.

The wheel is in two halves which are joined by through-bolts to the wheel hub as shown in Figure 18. During assembly of the nose wheel, the through-bolts must be tightened evenly and torqued to the value specified in Table 2.

6.5.1 TROUBLE SHOOTING – NOSE LEG

Table 6. Trouble Shooting – Nose Leg.

Trouble	Probable Cause	Remedy
Nose wheel shimmy	Nose strut bolts loose	Tighten bolts
	Loose or worn steering link	Tighten, replace defective parts
	Nose wheel out of balance	Refer Paragraph 6.6.5
	Wheel bearings loose	Replace

6.5.2 NOSE GEAR REMOVAL AND INSTALLATION

See Figures 17 and 18.

1. Weight or tie-down tail of aircraft to raise nose wheel off floor.

2. Disconnect nose wheel steering pushrods and steering yoke.

3. Unbolt steering yoke.

4. Remove upper collar / steering yoke (dependant on aircraft S/No.) from the top of the leg.

5. Pull the nose wheel strut assembly down from the bushes in the fuselage.

6. To install the nose gear, reverse the preceding steps.

6.5.3 NOSE GEAR INSPECTION AND REPAIR

1. Inspect steel tube and attachments for dents and straightness.

2. Inspect rubber spring assembly for damage or perishing of the rubber, or delamination of the rubber from the aluminium spacers between the rubber blocks.

3. Inspect aluminium wheel yoke for damage or bending.

4. Inspect bolts/nuts for torque – see torque values Table 2.

5. Repairs to the welded nose leg assembly beam must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

6.5.4 NOSE WHEEL SPEED FAIRING REMOVAL AND INSTALLATION

1. Remove the machine screws around the forward and rear sections of the fairing and remove the front section.

2. Loosen the axle nuts and remove the rear section.

3. Reverse the preceding steps for installation.

6.6 NOSE WHEEL

6.6.1 NOSE WHEEL REMOVAL AND INSTALLATION

1. Weight or tie-down tail of aircraft to raise the nose wheel off the floor.

2. Remove nose wheel axle bolt.

3. Pull nose wheel assembly from yoke.

4. Reverse the preceding steps to install nose wheel. Tighten axle bolt.

6.6.2 NOSE WHEEL DISASSEMBLY

Completely deflate tyre and break tyre beads loose at wheel rim. Refer to Figure 18.

WARNING

Injury can result from attempting to separate wheel halves with the tyre inflated. Avoid damaging wheel flanges when breaking beads loose as a scratch, nick or gouge may cause wheel failure.

1. Remove through-bolts and separate wheel halves.

2. Remove wheel hub.

3. Remove tyre and tube from wheel halves.

4. Remove bearings.

NOTE:

The bearings are "press-fit" in the wheel hub and should not be removed unless a new part is to be installed.

6.6.3 NOSE WHEEL INSPECTION AND REPAIR

1. Clean metal parts in solvent and dry thoroughly.

2. Inspect wheel halves for cracks. Cracked wheel halves should be discarded and new parts used. Sand out nicks, gouges and corroded areas. Clean thoroughly

3. Carefully inspect bearings for damage and discolouration.

NOTE:

Bearings are pre-packed. **DO NOT** clean with solvents as it will remove the packing.

4. Refit bearings.

6.6.4 NOSE WHEEL REASSEMBLY

1. Replace bearings in wheel hub.

2. Apply automotive wheel rim lubricant to the tyre bead faces on the inside of the wheel rims. Note that if this step is skipped disassembly of the wheel in future will be made much more difficult.

3. Position tyre and tube between wheel halves with tube inflation valve through hole in outside wheel half.

4. Mate wheel halves. While maintaining a light force, assemble a washer and nut on one through-bolt and tighten snugly. Assemble the remaining washers and nuts on the through-bolts and torque to the value specified in Table 2.

WARNING

Ensure tube is not pinched between wheel halves during assembly. Uneven or improper torque of through-bolt nuts can cause failure of bolts with resultant wheel failure.

5. Inflate tyre to seat the tyre beads, adjust to correct tyre pressure – Refer Aircraft Specifications above.

6.6.5 WHEEL BALANCING

Refer to Paragraph 6.4.8 for wheel balancing information.

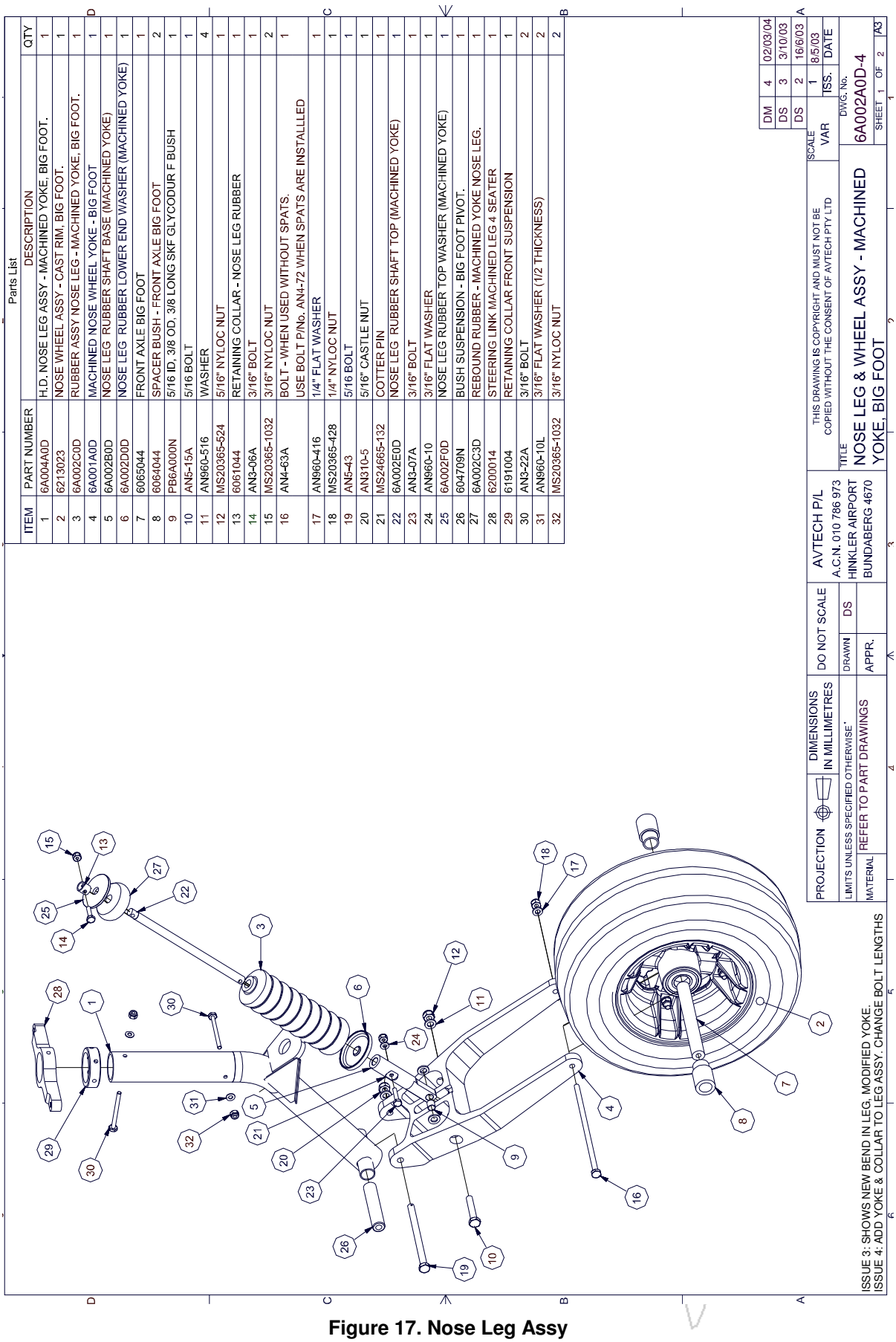
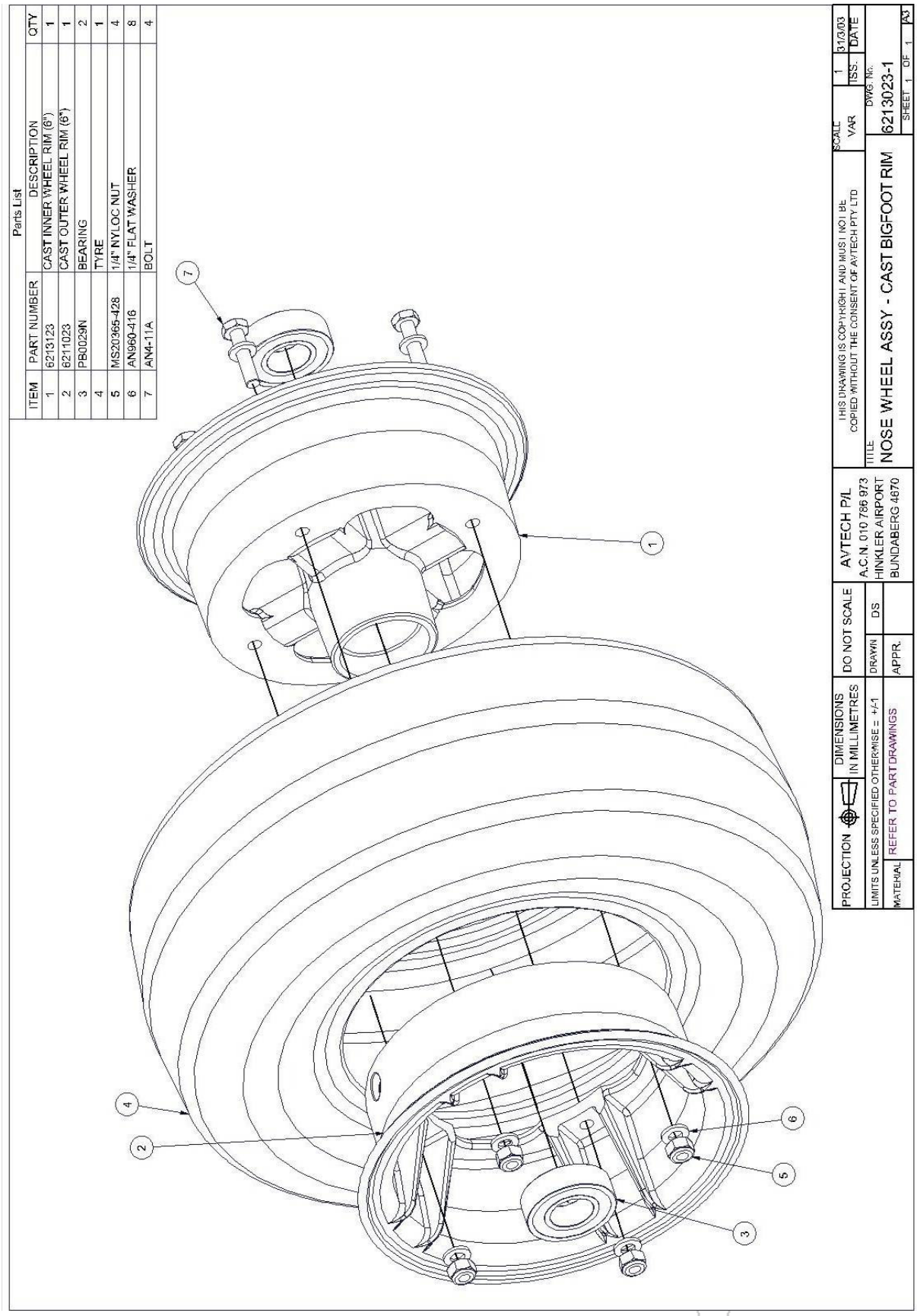

Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6A004A0D | H.D. NOSE LEG ASSY - MACHINED YOKE, BIG FOOT. | 1
2 | 6213023 | NOSE WHEEL ASSY - CAST RIM, BIG FOOT. | 1
3 | 6A002C0D | RUBBER ASSY NOSE LEG - MACHINED YOKE, BIG FOOT. | 1
4 | 6A001A0D | MACHINED NOSE WHEEL YOKE - BIG FOOT | 1
5 | 6A002B0D | NOSE LEG RUBBER SHAFT BASE (MACHINED YOKE) | 1
6 | 6A002D0D | NOSE LEG RUBBER LOWER END WASHER (MACHINED YOKE) | 1
7 | 6065044 | FRONT AXLE BIG FOOT | 1
8 | 6064044 | SPACER BUSH - FRONT AXLE BIG FOOT | 2
9 | PB6A000N | 5/16 ID, 3/8 OD, 3/8 LONG SKF GLYCODUR F BUSH | 1
10 | AN5-15A | 5/16 BOLT | 1
11 | AN960-516 | WASHER | 4
12 | MS20365-524 | 5/16" NYLOC NUT | 1
13 | 6061044 | RETAINING COLLAR - NOSE LEG RUBBER | 1
14 | AN3-06A | 3/16" BOLT | 1
15 | MS20365-1032 | 3/16" NYLOC NUT | 2
16 | AN4-63A | BOLT - WHEN USED WITHOUT SPATS. USE BOLT P/No. AN4-72 WHEN SPATS ARE INSTALLED | 1
17 | AN960-416 | 1/4" FLAT WASHER | 1
18 | MS20365-428 | 1/4" NYLOC NUT | 1
19 | AN5-43 | 5/16 BOLT | 1
20 | AN310-5 | 5/16" CASTLE NUT | 1
21 | MS24665-132 | COTTER PIN | 1
22 | 6A002E0D | NOSE LEG RUBBER SHAFT TOP (MACHINED YOKE) | 1
23 | AN3-07A | 3/16" BOLT | 1
24 | AN960-10 | 3/16" FLAT WASHER | 1
25 | 6A002F0D | NOSE LEG RUBBER TOP WASHER (MACHINED YOKE) | 1
26 | 604709N | BUSH SUSPENSION - BIG FOOT PIVOT. | 1
27 | 6A002C3D | REBOUND RUBBER - MACHINED YOKE NOSE LEG. | 1
28 | 6200014 | STEERING LINK MACHINED LEG 4 SEATER | 1
29 | 6191004 | RETAINING COLLAR FRONT SUSPENSION | 1
30 | AN3-22A | 3/16" BOLT | 2
31 | AN960-10L | 3/16" FLAT WASHER (1/2 THICKNESS) | 2
32 | MS20365-1032 | 3/16" NYLOC NUT | 2
DM 4 02/03/04
DS 3 3/10/03
DS 2 16/6/03
1 8/5/03
ISS. DATE
SCALE VAR
D/WG. No. 6A002A0D-4
SHEET 1 OF 2 A3
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE
MATERIAL REFER TO PART DRAWINGS
DRAWN DS
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
TITLE
NOSE LEG & WHEEL ASSY - MACHINED YOKE, BIG FOOT
ISSUE 3: SHOWS NEW BEND IN LEG, MODIFIED YOKE.
ISSUE 4: ADD YOKE & COLLAR TO LEG ASSY. CHANGE BOLT LENGTHS

Figure 17. Nose Leg Assy


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6213123 | CAST INNER WHEEL RIM (6") | 1
2 | 6211023 | CAST OUTER WHEEL RIM (6") | 1
3 | PB0029N | BEARING | 2
4 | | TYRE | 1
5 | MS20365-428 | 1/4" NYLOC NUT | 4
6 | AN960-416 | 1/4" FLAT WASHER | 8
7 | AN4-11A | BOLT | 4
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SCALE VAR
ISS. 1
DATE 31/3/03
DWG. No. 6213023-1
SHEET 1 OF 1 A3
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PROJECTION
DIMENSIONS IN MILLIMETRES
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DRAWN DS
MATERIAL REFER TO PART DRAWINGS
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Figure 18. Nose Wheel Hub Assembly

6.7 NOSE WHEEL STEERING SYSTEM

6.7.1 5.7.1 STEERING CENTRING ASSEMBLY

The Nosewheel Centring Assembly consists of springs which are stretched when the nose leg is moved to the left or the right. Repair is limited to replacement of parts.

6.7.2 NOSE WHEEL STEERING ASSEMBLY

Refer to Figure 17.

The Nosewheel Steering Assembly comprises of two Steering push rods attaching the Rudder Pedals and the Steering Link.

Repair is limited to the replacement of parts.

6.8 BRAKE SYSTEM

The hydraulic brake system consists of one master cylinder located on the front of the main longitudinal beam, flexible hoses connecting the master cylinder to each wheel brake cylinder and the single disc and a floating-cylinder type brake assembly located at each main landing gear wheel.

6.8.1 TROUBLE SHOOTING - BRAKES

Table 7. Trouble Shooting – Brakes

Trouble	Probable Cause	Remedy
Dragging brakes	Brake handle binding	Check and adjust
	Worn or broken master cylinder piston return spring	Repair or install new master cylinder
	Restriction in hydraulic lines or in master cylinder	Drain brake line, clear with compressed air. If cleaning lines fails, the master cylinder may be faulty and should be repaired or replaced.
Brakes fail to operate	Leak in system	If master cylinder or wheel cylinders are leaking, repair or install new parts.
	Air in system	Bleed system
	Lack of fluid in master cylinder	Fill and bleed system
	Master cylinder defective	Repair or install new parts
	Brake pads worn	Replace with new parts

6.8.2 BRAKE MASTER CYLINDER

The brake master cylinder, located on the front of the main longitudinal beam, is actuated by applying rearward pressure to the brake handle. A small reservoir is incorporated into the master cylinder for the fluid supply.

6.8.2.1 BRAKE MASTER CYLINDER REMOVAL & INSTALLATION

1. Remove the flexible hose from one wheel brake assembly and drain the hydraulic fluid from the brake system.
2. Unbolt & remove brake handle.
3. Disconnect flexible hose at master cylinder.
4. Unbolt master cylinder retaining bolts (2).
5. Plug or cap hydraulic fittings and hoses to prevent the entry of foreign material.
6. Reverse the preceding steps to install brake master cylinder, then fill and bleed brake system in accordance with Paragraph 6.8.5.

6.8.2.2 BRAKE MASTER CYLINDER REPAIR

Figure 20 may be used as a guide during disassembly, repair and reassembly of the brake master cylinder.

Repair is limited to installation of new parts, cleaning and adjustment. Use only automotive brake fluid. DO NOT use aircraft grade hydraulic fluid or damage will result.

6.8.3 HYDRAULIC BRAKE LINES

These lines are flexible hoses connected through a tee-piece.

Repair is limited to replacement.

6.8.4 WHEEL BRAKE ASSEMBLIES

The Wheel Brake Assemblies use a disc which is attached to the main wheel hub with through-bolts and a floating brake assembly (Refer to Figure 19 for caliper details, Figure 14 for installation of the caliper to the leg).

6.8.4.1 REMOVAL

The Wheel brake assemblies can be removed by disconnecting the brake hose and unbolting the brake cylinder from the backing plate. The brake disc is removed after the wheel is removed and disassembled. Refer to Figure 19 for disassembly of either wheel brake assembly.

6.8.4.2 WHEEL BRAKE INSPECTION AND REPAIR

1. Clean all parts except brake linings in dry cleaning solvent and dry thoroughly.

2. New piston sealing O-Rings should be installed each time the brakes are disassembled. If re-use is necessary, they should be wiped with a clean cloth saturated in automotive brake fluid and inspected for damage.

NOTE:
Thorough cleaning is important. Dirt and chips are the greatest single cause of malfunctions and leaks in hydraulic brake systems.

3. Check brake linings for deterioration or excessive wear.

4. Inspect brake cylinder bore for scoring. A scored cylinder will leak or cause rapid bucket wear. If wear is evident, install a new brake cylinder.

5. If the anchor bolts on the brake assembly are nicked or gouged, replace with new bolts.

6. Inspect wheel brake disc for a minimum thickness of 2mm. If brake disc is below minimum thickness, install a new part. For directional brake discs, refer to Figure 16 for installation details.

6.8.4.3 WHEEL BRAKE INSTALLATION

1. Place brake cylinder assembly in position on backing plate.

2. Install bolts, springs, outboard pad and nuts/washers.

3. Reconnect flexible hose.

4. Fill master cylinder reservoir with brake fluid.

5. Bleed brakes – Refer to Paragraph 6.8.5.

6.8.4.4 BRAKE LINING INSTALLATION

New brake linings should be installed when the existing linings are worn to expose the rivet heads.

To replace outboard lining:

1. Remove bolts securing outboard brake pad and brake cylinder to backing plate.

2. Remove outboard brake pad.

3. Place brake pad on a table with lining side down flat. Centre a 1/8" (or slightly smaller) punch on the rolled rivet and hit the punch sharply with a hammer. Punch out all rivets securing the lining to the pad plate.

NOTE:
A replacement kit for brake pads and rivets is available from JABIRU

4. Clamp the flat side of an anvil in a vice.

5. Align the new lining on the pad plate and place the brake rivet in the hole with the rivet head in the lining. Place the head against the anvil.

6. Centre the rivet setting punch on the lips of the rivet. While holding the pad plate down firmly against the lining, hit punch with hammer to set the rivet. Repeat blows on the punch until the lining is firmly against the pad plate.

7. Realign the lining of the pad plate and install and set rivets in the remaining holes.

8. Replace the brake pad and refix with through-bolts and springs.

To replace inboard lining:

1. Remove the through-bolts holding the caliper halves together and withdraw the inboard pad & backing plate.

2. Use a drill and punch to remove the rivets holding the pad onto the backing plate.

3. Replace lining in accordance with steps given above.

4. Install axle and wheel assembly – see Paragraph 6.4.6.

5. Install outboard brake pad and refix with through-bolts and springs.

6.8.5 BRAKE SYSTEM BLEEDING

1. Fill the brake master cylinder with automotive brake fluid.

2. Loosen the bleed nipple(s) at the brake cylinder(s).

3. Pull the handbrake back to the rear stop & hold in same position until nipple has been re torque. Release the hand brake & repeat step 3 until all air is expelled from lines.

NOTE:
Ensure brake master cylinder remains full above the outlet hose.

4. When air is fully expelled, tighten bleed nipples & check fittings for leaks.

5. Repeat steps 1-4 for other side brake.

WARNING

Use only automotive brake fluid. DO NOT use aircraft hydraulic fluid or damage will result.

6.8.6 BRAKE PAD ADJUSTMENT

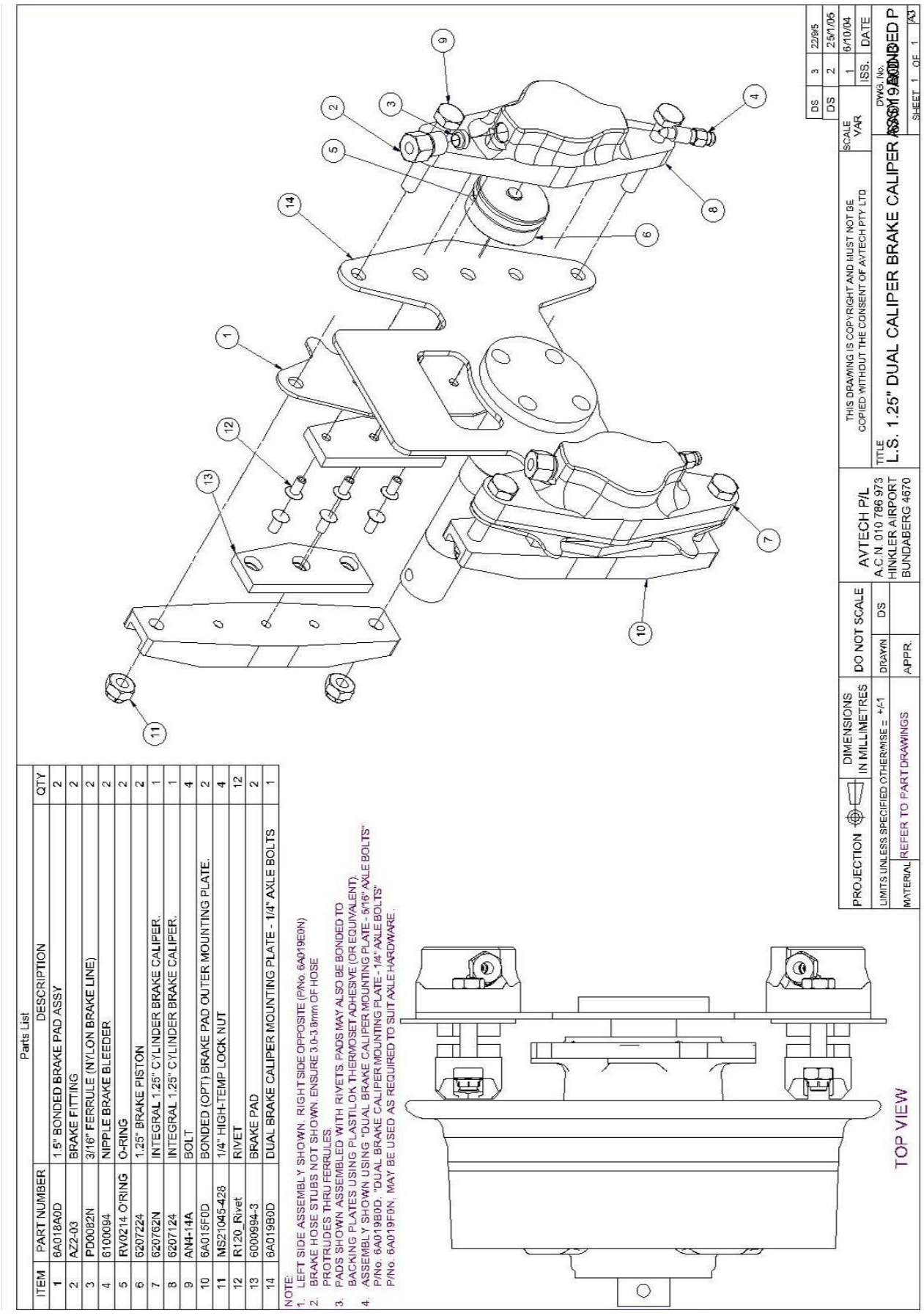
Brake Pads may be adjusted by removing the Main Wheel Spats and tightening the brake pad attaching bolts and nuts until the wheel just rotates freely.

6.8.7 PARKING BRAKE

The Parking Brake consists of an over centre cam on the brake handle. Should the cam have insufficient travel for the brakes to hold the aircraft with a propeller thrust of 2500rpm, adjust by one or all of the following:

1. Adjust brakes as described in Paragraph 6.8.6.

2. Bleed air from brake system as described in Paragraph 6.8.6.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6A018A0D | 1.5" BONDED BRAKE PAD ASSY | 2
2 | AZ2-03 | BRAKE FITTING | 2
3 | PD0082N | 3/16" FERRULE (NYLON BRAKE LINE) | 2
4 | 6100094 | NIPPLE BRAKE BLEEDER | 2
5 | RV0214 O'RING | O-RING | 2
6 | 6207224 | 1.25" BRAKE PISTON | 2
7 | 620762N | INTEGRAL 1.25" CYLINDER BRAKE CALIPER. | 1
8 | 6207124 | INTEGRAL 1.25" CYLINDER BRAKE CALIPER. | 1
9 | AN4-14A | BOLT | 4
10 | 6A015F0D | BONDED (OPT) BRAKE PAD OUTER MOUNTING PLATE. | 2
11 | MS21045-428 | 1/4" HIGH-TEMP LOCK NUT | 4
12 | R120_Rivet | RIVET | 12
13 | 6000994-3 | BRAKE PAD | 2
14 | 6A019B0D | DUAL BRAKE CALIPER MOUNTING PLATE - 1/4" AXLE BOLTS | 1
NOTE:
1. LEFT SIDE ASSEMBLY SHOWN. RIGHT SIDE OPPOSITE (P/No. 6A019E0N)
2. BRAKE HOSE STUBS NOT SHOWN. ENSURE 3.0-3.8mm OF HOSE PROTRUDES THRU FERRULES.
3. PADS SHOWN ASSEMBLED WITH RIVETS. PADS MAY ALSO BE BONDED TO BACKING PLATES USING PLASTILOK THERMOSET ADHESIVE (OR EQUIVALENT).
4. ASSEMBLY SHOWN USING "DUAL BRAKE CALIPER MOUNTING PLATE - 5/16" AXLE BOLTS" P/No. 6A019B0D. "DUAL BRAKE CALIPER MOUNTING PLATE - 1/4" AXLE BOLTS" P/No. 6A019F0N, MAY BE USED AS REQUIRED TO SUIT AXLE HARDWARE.
TOP VIEW
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE = +/-1
MATERIAL
REFER TO PART DRAWINGS
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BUNDABERG 4670
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TITLE
L.S. 1.25" DUAL CALIPER BRAKE CALIPER ASSY
SCALE VAR
DWG. No.
SHEET 1 OF 1
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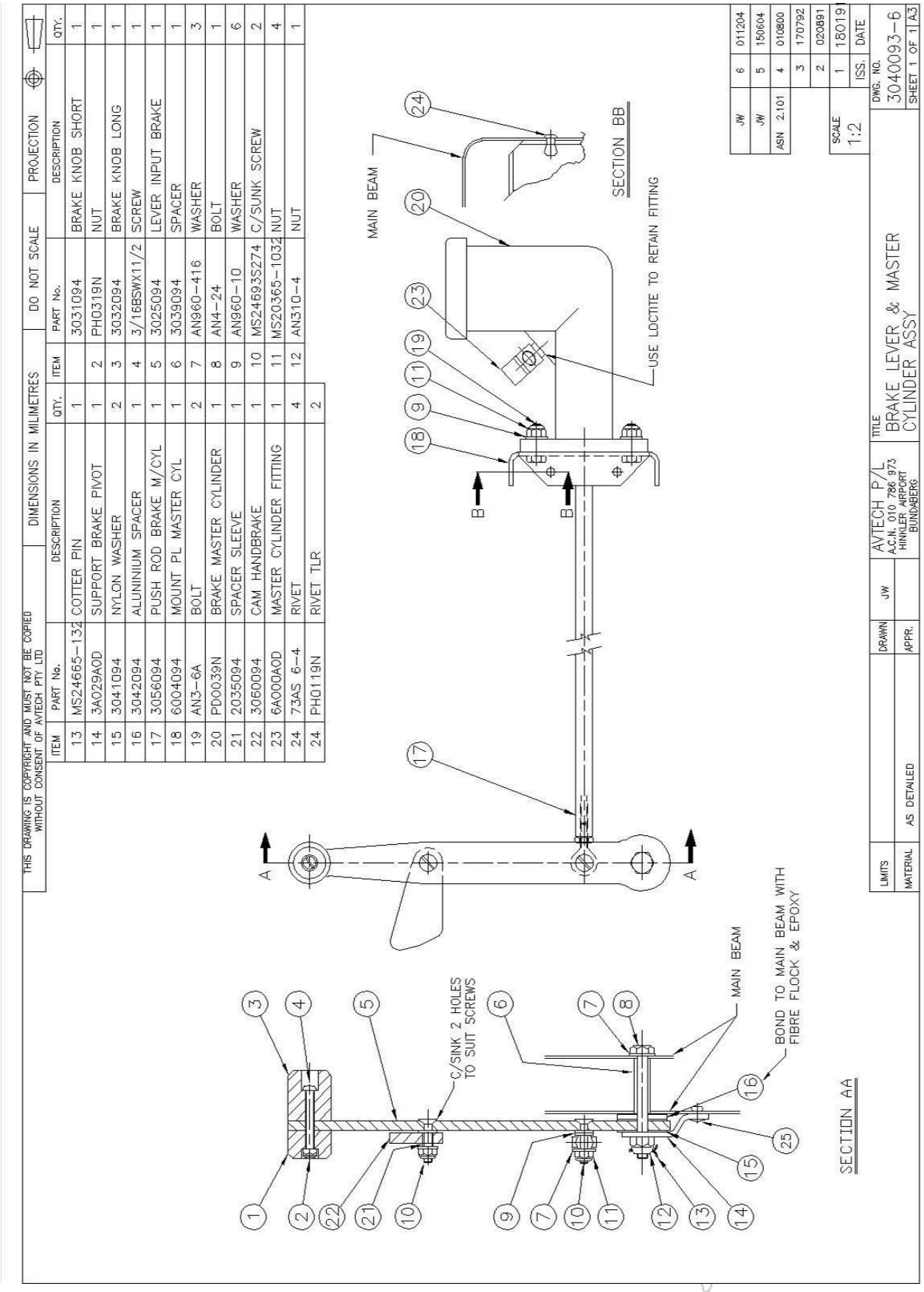
ISS. | DATE
1 | 6/10/04
2 | 25/1/05
3 | 23/9/5
DS

Figure 19. Brake Calliper Assy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DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
ITEM | PART No. | DESCRIPTION | QTY.
13 | MS24665-132 | COTTER PIN | 1
14 | 3A029A0D | SUPPORT BRAKE PIVOT | 1
15 | 3041094 | NYLON WASHER | 2
16 | 3042094 | ALUNINIUM SPACER | 1
17 | 3056094 | PUSH ROD BRAKE M/CYL | 1
18 | 6004094 | MOUNT PL MASTER CYL | 1
19 | AN3-6A | BOLT | 2
20 | PD0039N | BRAKE MASTER CYLINDER | 1
21 | 2035094 | SPACER SLEEVE | 1
22 | 3060094 | CAM HANDBRAKE | 1
23 | 6A000A0D | MASTER CYLINDER FITTING | 1
24 | 73AS 6-4 | RIVET | 4
24 | PH0119N | RIVET TLR | 2
ITEM | PART No. | DESCRIPTION | QTY.
1 | 3031094 | BRAKE KNOB SHORT | 1
2 | PH0319N | NUT | 1
3 | 3032094 | BRAKE KNOB LONG | 1
4 | 3/16BSWX11/2 | SCREW | 1
5 | 3025094 | LEVER INPUT BRAKE | 1
6 | 3039094 | SPACER | 1
7 | AN960-416 | WASHER | 3
8 | AN4-24 | BOLT | 1
9 | AN960-10 | WASHER | 6
10 | MS24693S274 | C/SUNK SCREW | 2
11 | MS20365-1032 | NUT | 4
12 | AN310-4 | NUT | 1
MAIN BEAM
SECTION BB
USE LOCTITE TO RETAIN FITTING
C/SINK 2 HOLES TO SUIT SCREWS
MAIN BEAM
BOND TO MAIN BEAM WITH FIBRE FLOCK & EPOXY
SECTION AA
JW 6 011204
JW 5 150604
ASN 2.101 4 010800
3 170792
2 020891
SCALE 1:2
1 180191
ISS. DATE
DWG. NO. 3040093-6
SHEET 1 OF 1 A3
TITLE BRAKE LEVER & MASTER CYLINDER ASSY
AVTECH P/L A.C.N. 010 786 973 HINKLER AIRPORT BUNDABERG
DRAWN JW
APPR.
LIMITS
MATERIAL AS DETAILED

Figure 20. Brake Master Cylinder Assy

7 SECTION 7 - AILERON CONTROL SYSTEM

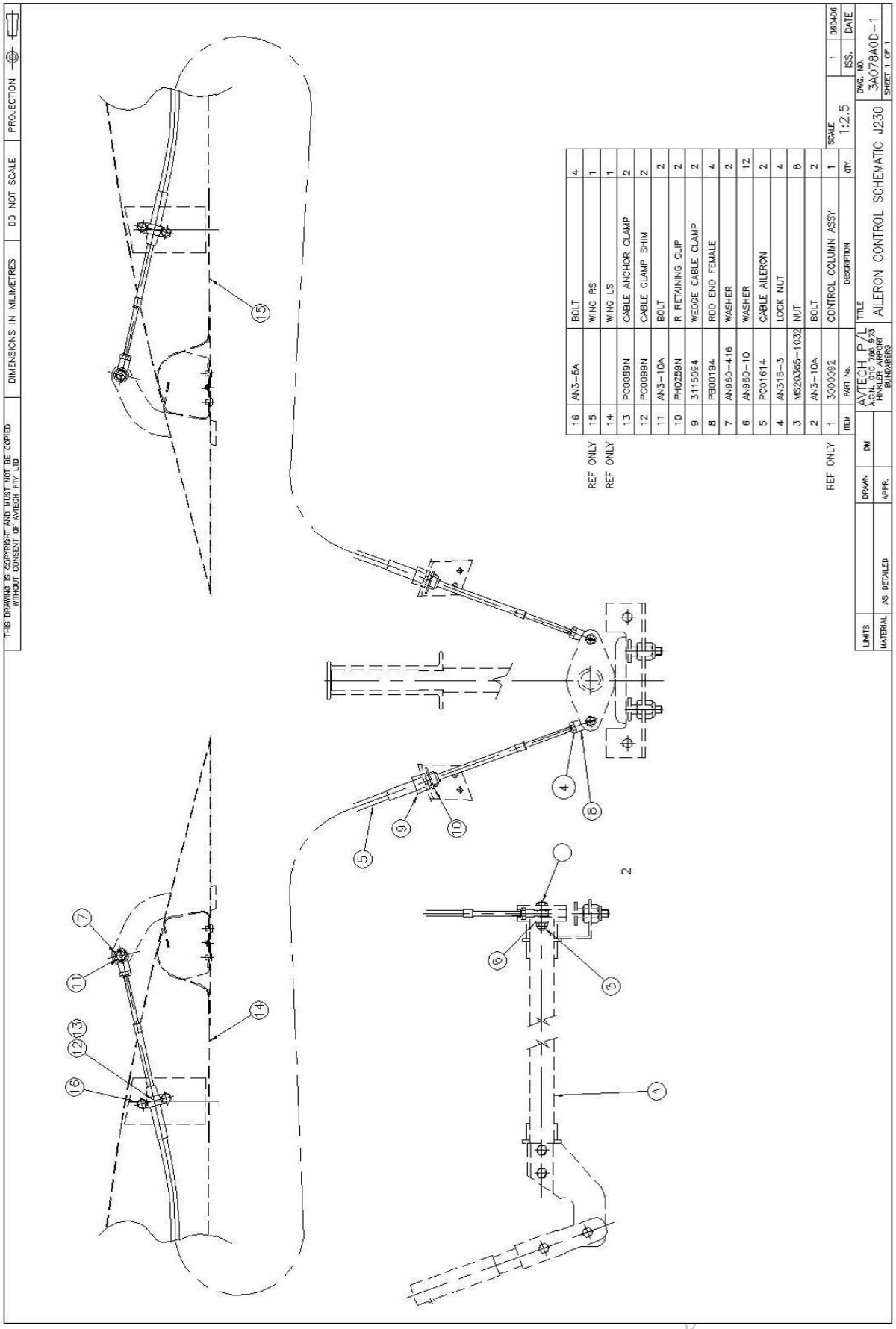
7.1 AILERON CONTROL SYSTEM

Refer to Figure 21.

The aileron control system is comprised of a control column and two enclosed push-pull cables fitted with spherical bearings.

WARNING

All spherical bearings must be fitted with a large washer on the outside of the through-bolt to prevent the bearing case and cable releasing in the event of a bearing failure. See Figure 21.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HINKLER AIRPORT
BUNDABERG
TITLE
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SCALE 1:2.5
SHEET 1 OF 1
ISS. 1
DATE 060406
DRAWN DM
APPR.
LIMITS
MATERIAL AS DETAILED
ITEM | PART No. | DESCRIPTION | QTY.
1 | 3000092 | CONTROL COLUMN ASSY | 1 | REF ONLY
2 | AN3-10A | BOLT | 2
3 | MS220365-1032 | NUT | 6
4 | AN316-3 | LOCK NUT | 4
5 | PC01614 | CABLE AILERON | 2
6 | AN960-10 | WASHER | 12
7 | AN960-416 | WASHER | 2
8 | PB00194 | ROD END FEMALE | 4
9 | 3115094 | WEDGE CABLE CLAMP | 2
10 | PH0259N | R RETAINING CLIP | 2
11 | AN3-10A | BOLT | 2
12 | PC0099N | CABLE CLAMP SHIM | 2
13 | PC0039N | CABLE ANCHOR CLAMP | 2
14 | | WING LS | 1 | REF ONLY
15 | | WING RS | 1 | REF ONLY
16 | AN3-5A | BOLT | 4

Figure 21. Aileron System Schematic

7.2 CONTROL COLUMN

Refer to Figure 22.

7.2.1 CONTROL COLUMN REMOVAL

1. If required, unbolt & remove the control stick from the pivot plate.

2. Unbolt and remove the aileron cable ends from the aileron drive arms at the lower end of the control column.

3. Unbolt & remove the aileron drive yoke from the lower end of the control column.

4. Unbolt and remove the pivot plate from the upper end of the control column

5. draw the column out of the centre console.

7.2.2 CONTROL COLUMN INSPECTION & REPAIR

Repair is limited to replacing worn parts. Refer to Figure 22 for guidance.

7.2.3 CONTROL COLUMN INSTALLATION

Installation is the reverse of the procedure given above.

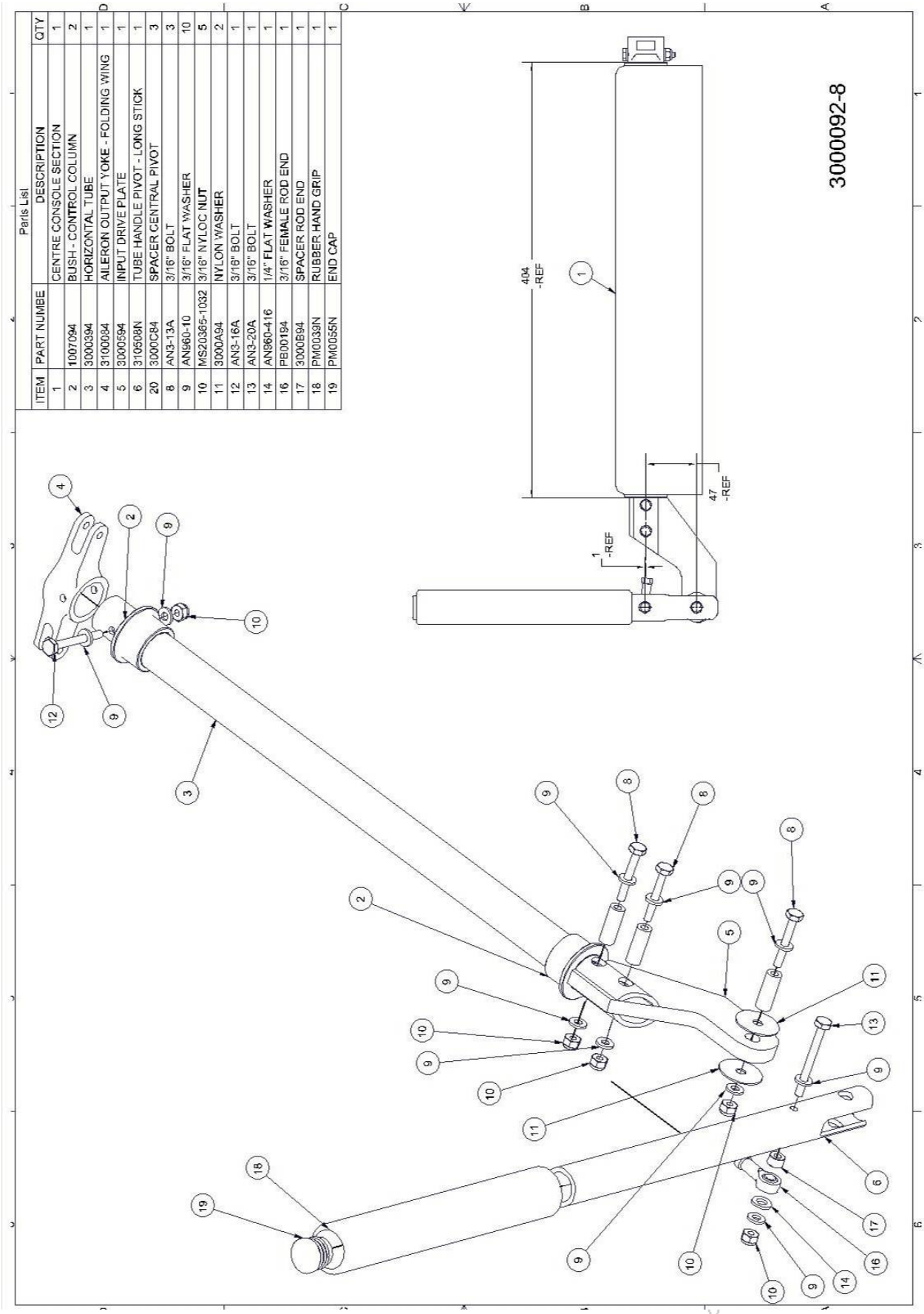

Parts List
ITEM | PART NUMBE | DESCRIPTION | QTY
1 | | CENTRE CONSOLE SECTION | 1
2 | 1007094 | BUSH - CONTROL COLUMN | 2
3 | 3000394 | HORIZONTAL TUBE | 1
4 | 3100084 | AILERON OUTPUT YOKE - FOLDING WING | 1
5 | 3000594 | INPUT DRIVE PLATE | 1
6 | 310608N | TUBE HANDLE PIVOT - LONG STICK | 1
20 | 3000C84 | SPACER CENTRAL PIVOT | 3
8 | AN3-13A | 3/16" BOLT | 3
9 | AN960-10 | 3/16" FLAT WASHER | 10
10 | MS20365-1032 | 3/16" NYLOC NUT | 5
11 | 3000A94 | NYLON WASHER | 2
12 | AN3-16A | 3/16" BOLT | 1
13 | AN3-20A | 3/16" BOLT | 1
14 | AN960-416 | 1/4" FLAT WASHER | 1
16 | PB00194 | 3/16" FEMALE ROD END | 1
17 | 3000B94 | SPACER ROD END | 1
18 | PM0039N | RUBBER HAND GRIP | 1
19 | PM0055N | END CAP | 1
3000092-8
404 -REF
47 -REF
1 -REF

Figure 22. Control Column Assy

7.3 CONTROL CABLES

Control Cables are of the enclosed push-pull type, fitted with spherical bearings at both ends.

To operate, the outer cover of the cable must be clamped firmly at each end.

7.3.1 CONTROL CABLE REMOVAL

1. Unbolt the connections (rod end bearings) at either ends of the cable.

2. Unbolt the clamps at either end of the cable.

3. Where required, remove any ties etc used to restrain the cables in the aircraft.

4. Tie a string or light wire to one end of the cable.

5. Draw the cable out of the aircraft, leaving the string/wire in place to allow installation of a replacement part.

7.3.2 CONTROL CABLE INSPECTION & REPAIR

Repair of control cables is limited to the installation of new parts.

7.3.3 CONTROL CABLE INSTALLATION

Installation procedure is the opposite of removal procedure outlined above.

7.4 AILERONS

Ailerons comprise a moulded and bonded monocoque structure embodying a composite control horn at the outboard end.

7.4.1 AILERON REMOVAL & INSTALLATION

1. Unbolt cable from aileron control arm.

2. Loosen screws in hinge pin retainers and lift hinge pin retainer away from the hinge pin. It is not necessary to completely remove these parts.

3. Remove hinge pins.

4. Remove aileron.

5. Reverse the preceding steps for installation.

7.4.2 AILERON INSPECTION & REPAIR

Inspect ailerons for any signs of delamination or cracking. Pay particular attention to the Control Horn and hinges and their surrounding areas.

Repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

7.4.3 AILERON BALANCING

The aileron does not have balancing weights fitted. The control does however have limits for weight and hinge moment:

Weight	1150g	+/- 100g
Hinge Moment	94000g.mm	+/- 4000g.mm

The aileron balance is checked at the factory during assembly and unless they are repaired or refinished the balance should not change.

To balance the ailerons they must be removed from the aircraft. Balancing is done around the hinges with the hinge pin line horizontal and on the high side of the ailerons. The hinge moments can be measured by measuring the upwards force needed to maintain the flat side of the aileron horizontal. Note that as this load is small, a finely graduated spring balance or similar measuring instrument will be required.

7.5 CONTROL RIGGING

1. With the control stick in the neutral position, use a straight-edge not less than 1 metre long. Hold the straight-edge flush on the underside of the wing aerofoil and adjust aileron to sit on the straight-edge. Make this adjustment with the cable rod-ends, ensuring that on completion the locknut is tight on the rod-ends and that cable is visible through the inspection hole in the rod-end.

2. Check UP travel on both ailerons using the Aileron Rigging Template (see Appendix 3).

3. Use the Aileron Control Stop adjustment (see Figure 23) to adjust the total aileron movement (ie. UP travel) and use cable adjustment as previously described to proportion UP and DOWN travel. The Aileron Control Stop should engage before the Aileron Arm hits the UP travel stop at the Wing Tip.

4. DO NOT move the Cable Anchors – these positions have been set using a jig.

WARNING

The control cable must be connected to the same side of the control column bellcrank as the wing to which the aileron is fitted, otherwise control surface reversal will result.

DO NOT CROSS CABLES

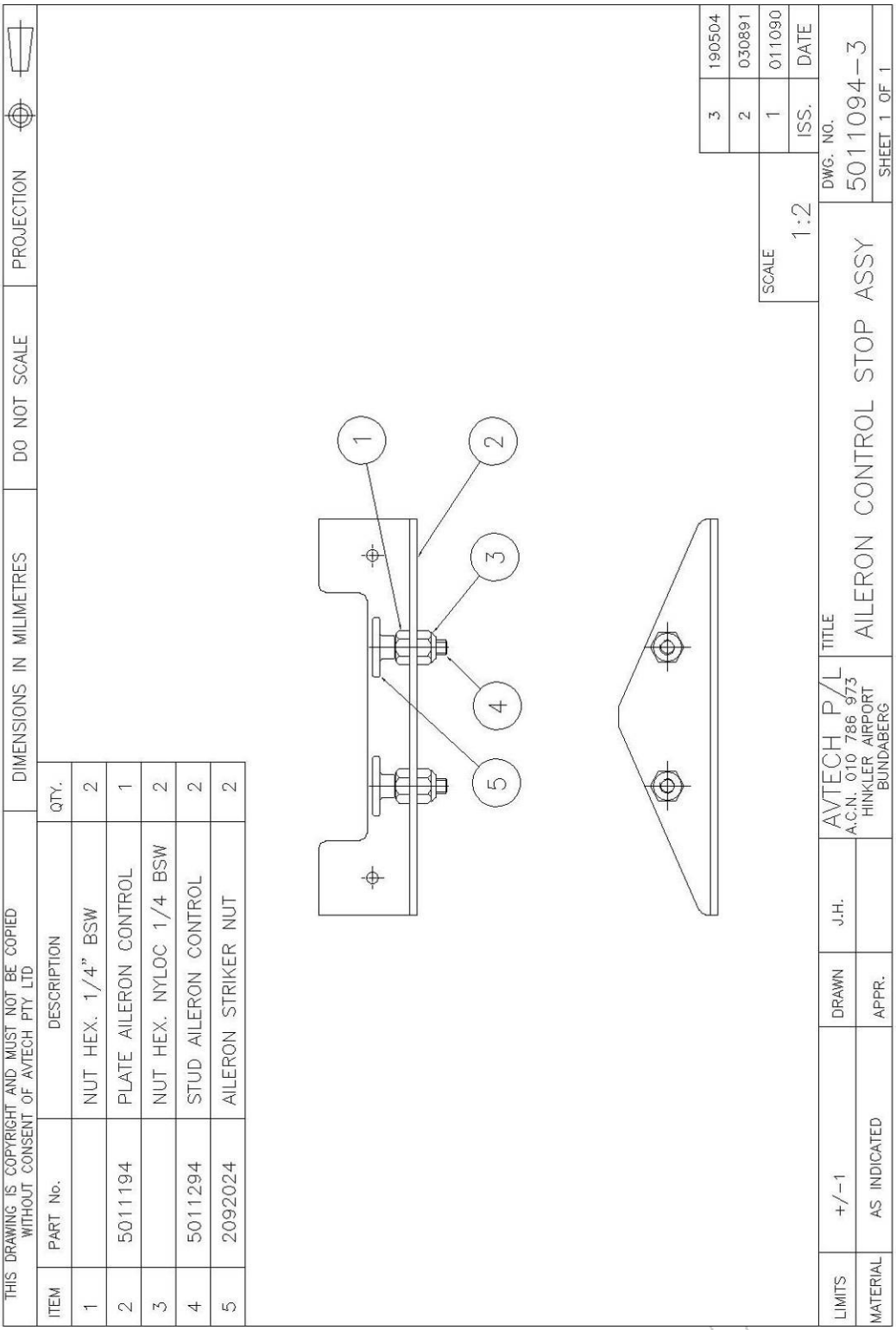


Figure 23. Aileron Stops

8 SECTION 8 - WING FLAP CONTROL SYSTEM

8.1 WING FLAP CONTROL SYSTEM

Refer to Figures 24 to 26.

The wing flap control system comprises a switch & position indicator mounted on the instrument panel, and a electronic linear actuator-driven common shaft assembly, with pushrods connecting to the flap control surface horns.

WARNING

All spherical rod end bearings must be fitted with a large washer on the outside of the through-bolt to prevent the bearing case and cable releasing in the event of a bearing failure.

8.1.1 OPERATIONAL CHECK

Operate flaps through their full range of travel, observing for uneven or jumpy motion or binding in the system. Ensure flaps are moving together through their full range of travel.

8.1.2 FLAP SWITCH ASSEMBLY

The flap position controlling switch uses a manual toggle switch with position indicator to control the flap deflection.

8.1.3 FLAP CROSS SHAFT ASSEMBLY

See Figure 26.

8.1.4 FLAP CROSS SHAFT REMOVAL

1. Remove one wing to allow removal of shaft. Refer to Section 5.1.1 for details on wing removal procedure.

2. Disconnect the flap drive motor from the cross shaft input arm.

3. Remove external flap drive arm from the end of the shaft nearest the remaining wing.

4. Remove the bolts holding the input arm to the flap cross shaft. If fitted, it will be necessary to remove any upholstery and paint from the shaft to allow it to be drawn out through the bearings on the sides of the fuselage.

5. Draw the tube out of the fuselage.

8.1.5 FLAP CROSS SHAFT INSPECTION & REPAIR

Repair is limited to replacing worn parts. Refer to Figure 26 for guidance.

8.1.6 FLAP CROSS SHAFT INSTALLATION

Installation procedure is the reverse of assembly.

8.1.7 FLAP POSITION INDICATOR REMOVAL

Refer to Figures 27 and 28 for guidance.

1. Undo screws holding indicator to “A” pillar.

2. Drill rivets and disassemble indicator.

3. Loosen bolt on flap drive motor shaft & remove cable.

8.1.8 FLAP POSITION INDICATOR INSPECTION & REPAIR

Repair of the position indicator is limited to replacing worn or damaged parts.

8.1.9 FLAP POSITION INDICATOR INSTALLATION

Installation procedure is the reverse of the removal procedure outlined above.

8.1.10 FLAP CONTROL ROD

To remove, unbolt at both ends and remove. Reverse for installation.

8.2 FLAP

The flaps comprise a moulded and bonded monocoque structure embodying a composite control arm at the inboard end.

8.2.1 REMOVAL AND INSTALLATION

1. Unbolt rod end from flap control arm.

2. Remove each flap hinge bolt and spacer.

3. Remove Flap.

4. Reverse the preceding steps for installation. Replace all three nyloc nuts and torque in accordance with Table 2.

8.2.2 INSPECTION AND REPAIR

Inspect flaps for any signs of delamination or cracking. Pay particular attention to the Control Horn and hinges and their surrounding areas.

Repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

8.2.3 FLAP BALANCING

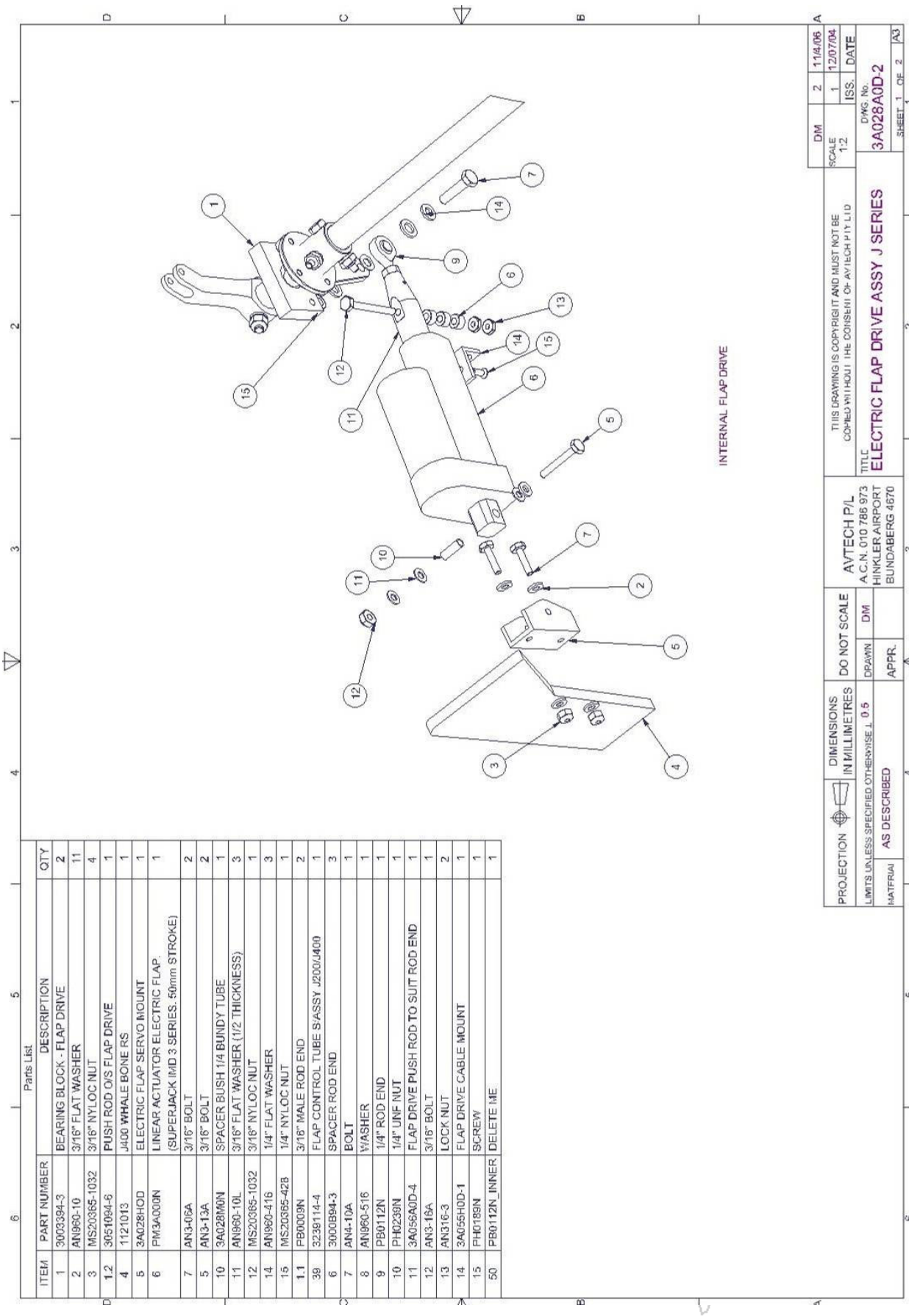
The flaps on the J230 are not balanced.

8.2.4 FLAP RIGGING (AS PER TEMPLATE)

1. With the flap selector lever in the neutral position, use a straight edge not less than 1 metre long. Hold the straight edge flush on the underside of the wing aerofoil and adjust flap so that the trailing edge of the flap sits on the straight edge and there is 4mm clearance between straight edge and trailing edge of the wing.

2. Adjust with the rod ends. Ensure that the lock nut is tight on the control ends and that the thread is visible through the hole in the rod.

3. Check for FULL DOWN travel using the Flap Rigging Template (see Appendix 3). Please note: There is only a requirement to check the down deflection because it has the highest value in travel.


INTERNAL FLAP DRIVE
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 3003384-3 | BEARING BLOCK - FLAP DRIVE | 2
2 | AN960-10 | 3/16" FLAT WASHER | 11
3 | MS20365-1032 | 3/16" NYLOC NUT | 4
1.2 | 3051094-6 | PUSH ROD O/S FLAP DRIVE | 1
4 | 1121013 | J400 WHALE BONE RS | 1
5 | 3A028HOD | ELECTRIC FLAP SERVO MOUNT | 1
6 | PM3A000N | LINEAR ACTUATOR ELECTRIC FLAP (SUPERJACK IMD 3 SERIES. 50mm STROKE) | 1
7 | AN3-06A | 3/16" BOLT | 2
5 | AN3-13A | 3/16" BOLT | 2
10 | 3A028M0N | SPACER BUSH 1/4 BUNDY TUBE | 1
11 | AN960-10L | 3/16" FLAT WASHER (1/2 THICKNESS) | 3
12 | MS20365-1032 | 3/16" NYLOC NUT | 1
14 | AN960-416 | 1/4" FLAT WASHER | 3
15 | MS20365-428 | 1/4" NYLOC NUT | 1
1.1 | PB0009N | 3/16" MALE ROD END | 1
39 | 3239114-4 | FLAP CONTROL TUBE S/ASSY J200/J400 | 2
6 | 3000B94-3 | SPACER ROD END | 1
7 | AN4-10A | BOLT | 3
8 | AN960-516 | WASHER | 1
9 | PB0112N | 1/4" ROD END | 1
10 | PH0239N | 1/4" UNF NUT | 1
11 | 3A056A0D-4 | FLAP DRIVE PUSH ROD TO SUIT ROD END | 1
12 | AN3-16A | 3/16" BOLT | 1
13 | AN316-3 | LOCK NUT | 1
14 | 3A055H0D-1 | FLAP DRIVE CABLE MOUNT | 2
15 | PH0189N | SCREW | 1
50 | PB0112N_INNER | DELETE ME | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
DRAWN DM
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
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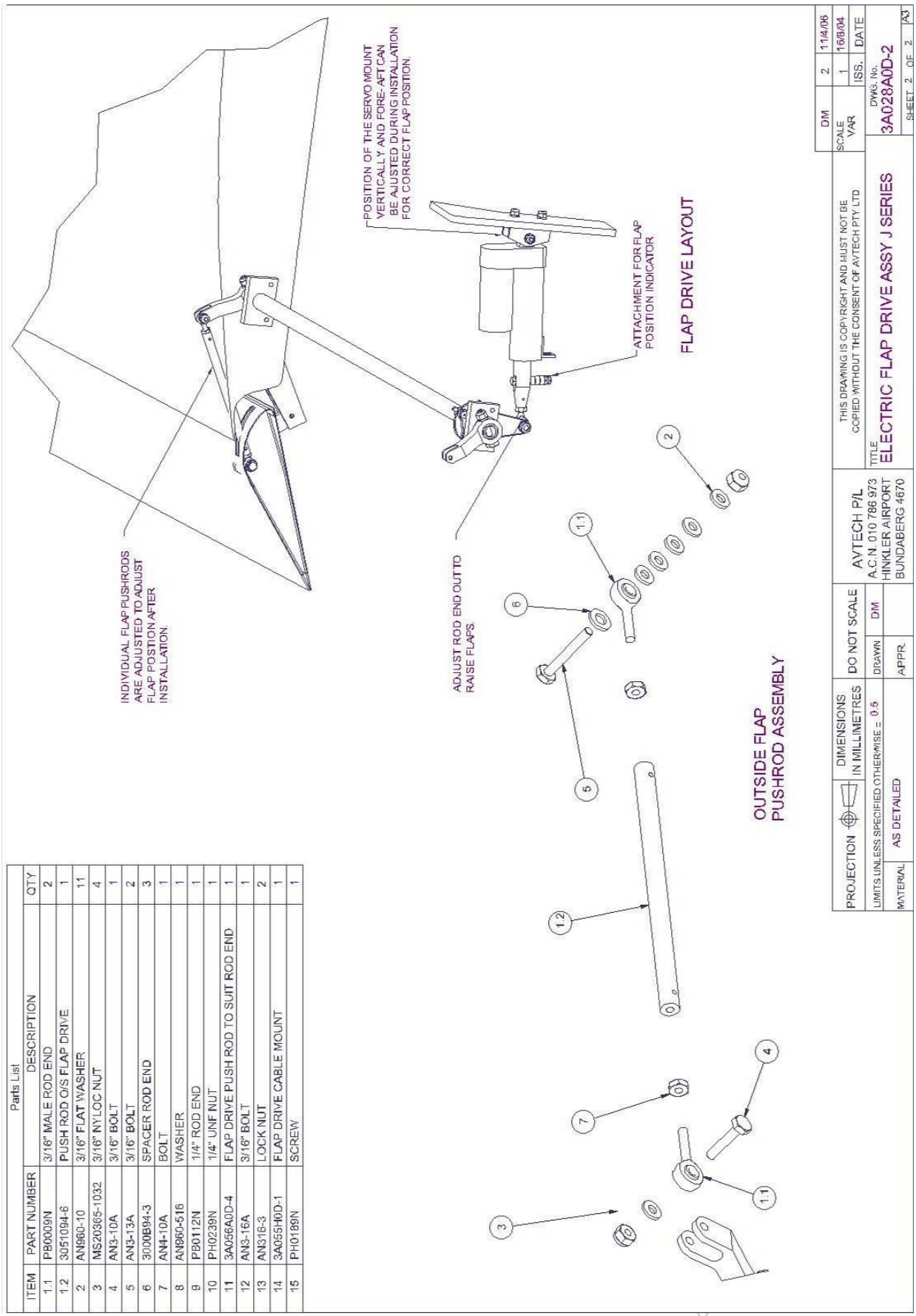
TITLE
ELECTRIC FLAP DRIVE ASSY J SERIES
SCALE 1:2
DWG No 3A028A0D-2
ISS. DATE
DM 2 11/4/06
1 12/07/04
SHEET 1 OF 2 A3
LIMITS UNLESS SPECIFIED OTHERWISE ± 0.5
MATERIAL AS DESCRIBED

Figure 24. Flap Controls – Sheet 1


POSITION OF THE SERVO MOUNT VERTICALLY AND FORE- AFT CAN BE AJUSTED DURING INSTALLATION FOR CORRECT FLAP POSITION.
ATTACHMENT FOR FLAP POSITION INDICATOR
FLAP DRIVE LAYOUT
INDIVIDUAL FLAP PUSHRODS ARE ADJUSTED TO ADJUST FLAP POSITION AFTER INSTALLATION.
ADJUST ROD END OUT TO RAISE FLAPS.
OUTSIDE FLAP PUSHROD ASSEMBLY
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1.1 | PB0009N | 3/16" MALE ROD END | 2
1.2 | 3051094-6 | PUSH ROD O/S FLAP DRIVE | 1
2 | AN960-10 | 3/16" FLAT WASHER | 11
3 | MS20365-1032 | 3/16" NYLOC NUT | 4
4 | AN3-10A | 3/16" BOLT | 1
5 | AN3-13A | 3/16" BOLT | 2
6 | 3000B94-3 | SPACER ROD END | 3
7 | AN4-10A | BOLT | 1
8 | AN960-516 | WASHER | 1
9 | PB0112N | 1/4" ROD END | 1
10 | PH0239N | 1/4" UNF NUT | 1
11 | 3A056A0D-4 | FLAP DRIVE PUSH ROD TO SUIT ROD END | 1
12 | AN3-16A | 3/16" BOLT | 1
13 | AN316-3 | LOCK NUT | 2
14 | 3A055H0D-1 | FLAP DRIVE CABLE MOUNT | 1
15 | PH0199N | SCREW | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE = 0.5
DRAWN DM
APPR.
MATERIAL AS DETAILED
AVTECH P/L
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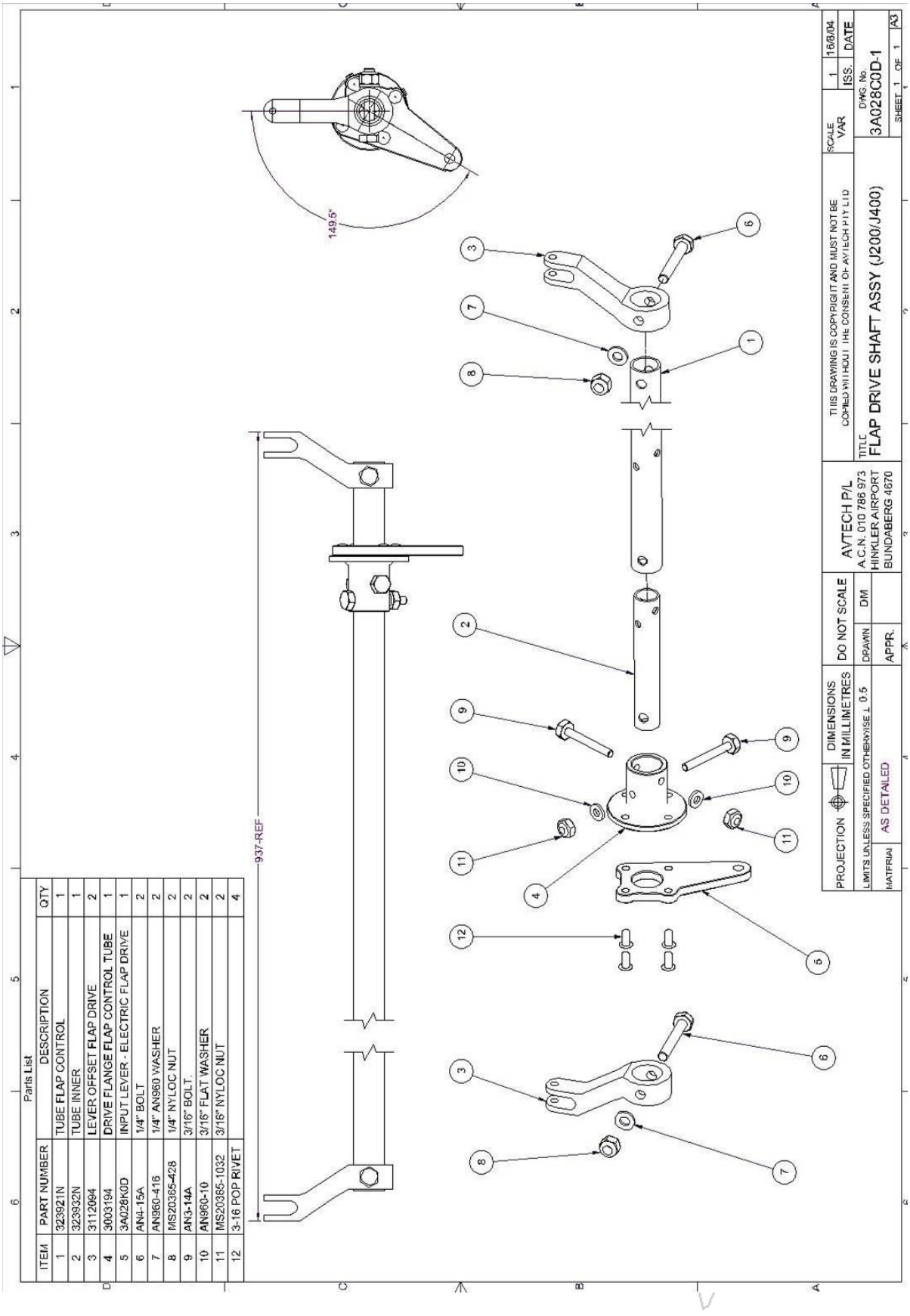
SHEET 2 OF 2 A3
ISS. 1 DATE 16/6/04
DM 2 11/4/06

Figure 25. Flap Controls – Sheet 2


149.5°
937-REF
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 323921N | TUBE FLAP CONTROL | 1
2 | 323932N | TUBE INNER | 1
3 | 3112094 | LEVER OFFSET FLAP DRIVE | 2
4 | 3003194 | DRIVE FLANGE FLAP CONTROL TUBE | 1
5 | 3A028K0D | INPUT LEVER - ELECTRIC FLAP DRIVE | 1
6 | AN4-15A | 1/4" BOLT | 2
7 | AN960-416 | 1/4" AN960 WASHER | 2
8 | MS20365-428 | 1/4" NYLOC NUT | 2
9 | AN3-14A | 3/16" BOLT | 2
10 | AN960-10 | 3/16" FLAT WASHER | 2
11 | MS20365-1032 | 3/16" NYLOC NUT | 2
12 | 3-16 POP RIVET | | 4
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE ± 0.5
MATERIAL AS DETAILED
DRAWN DM
APPR.
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TITLE FLAP DRIVE SHAFT ASSY (J200/J400)
SCALE VAR
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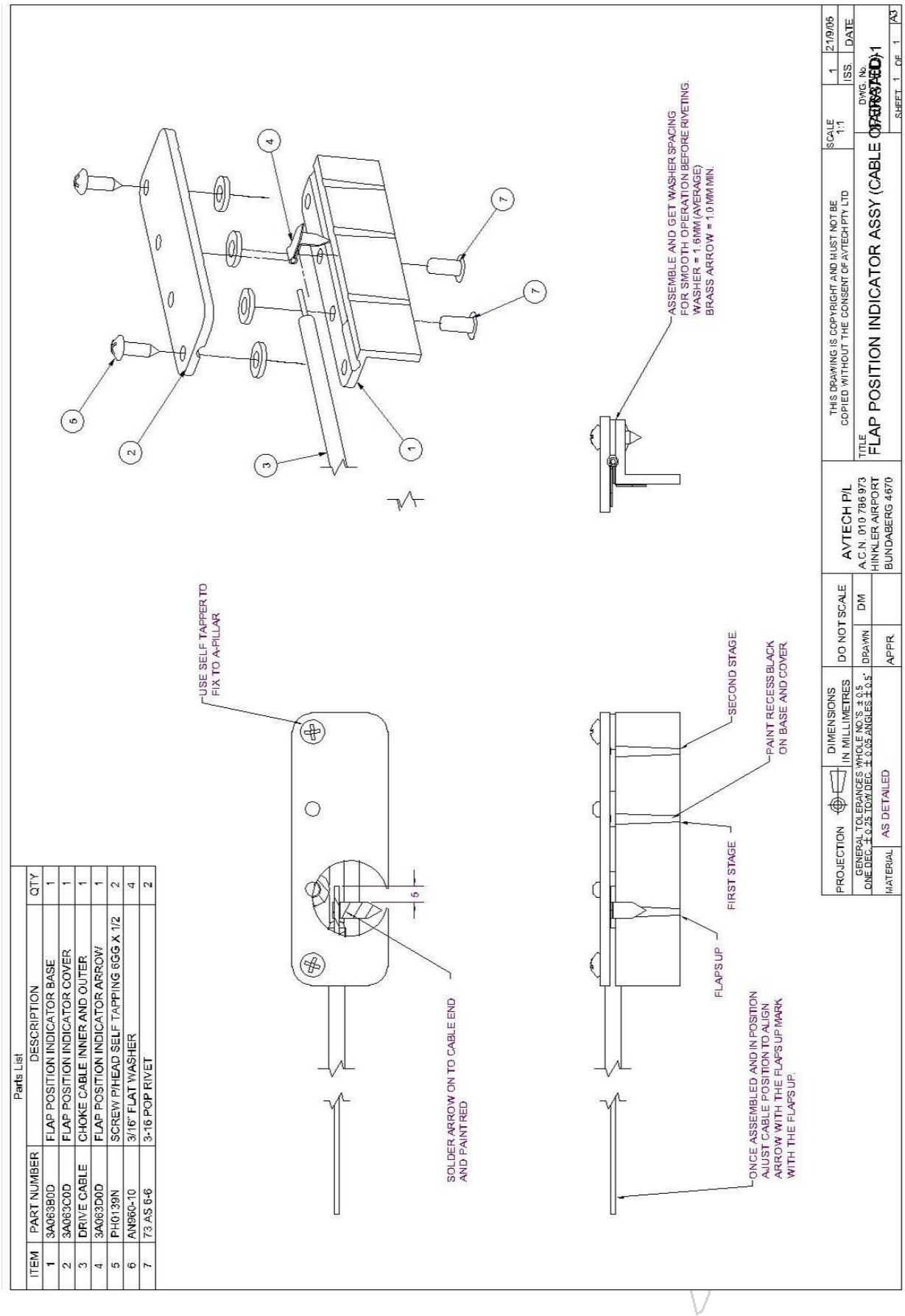
SHEET 1 OF 1 A3

Figure 26. Flap Cross Tube Assy


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 3A063B0D | FLAP POSITION INDICATOR BASE | 1
2 | 3A063C0D | FLAP POSITION INDICATOR COVER | 1
3 | DRIVE CABLE | CHOKE CABLE INNER AND OUTER | 1
4 | 3A063D0D | FLAP POSITION INDICATOR ARROW | 1
5 | PH0139N | SCREW P/HEAD SELF TAPPING 6GG X 1/2 | 2
6 | AN960-10 | 3/16" FLAT WASHER | 4
7 | 73 AS 6-6 | 3-16 POP RIVET | 2
ASSEMBLE AND GET WASHER SPACING FOR SMOOTH OPERATION BEFORE RIVETING. WASHER = 1.6MM (AVERAGE) BRASS ARROW = 1.0 MM MIN.
USE SELF TAPPER TO FIX TO A-PILLAR
SOLDER ARROW ON TO CABLE END AND PAINT RED
SECOND STAGE
PAINT RECESS BLACK ON BASE AND COVER
FIRST STAGE
FLAPS UP
ONCE ASSEMBLED AND IN POSITION AJUST CABLE POSITION TO ALIGN ARROW WITH THE FLAPS UP MARK WITH THE FLAPS UP.
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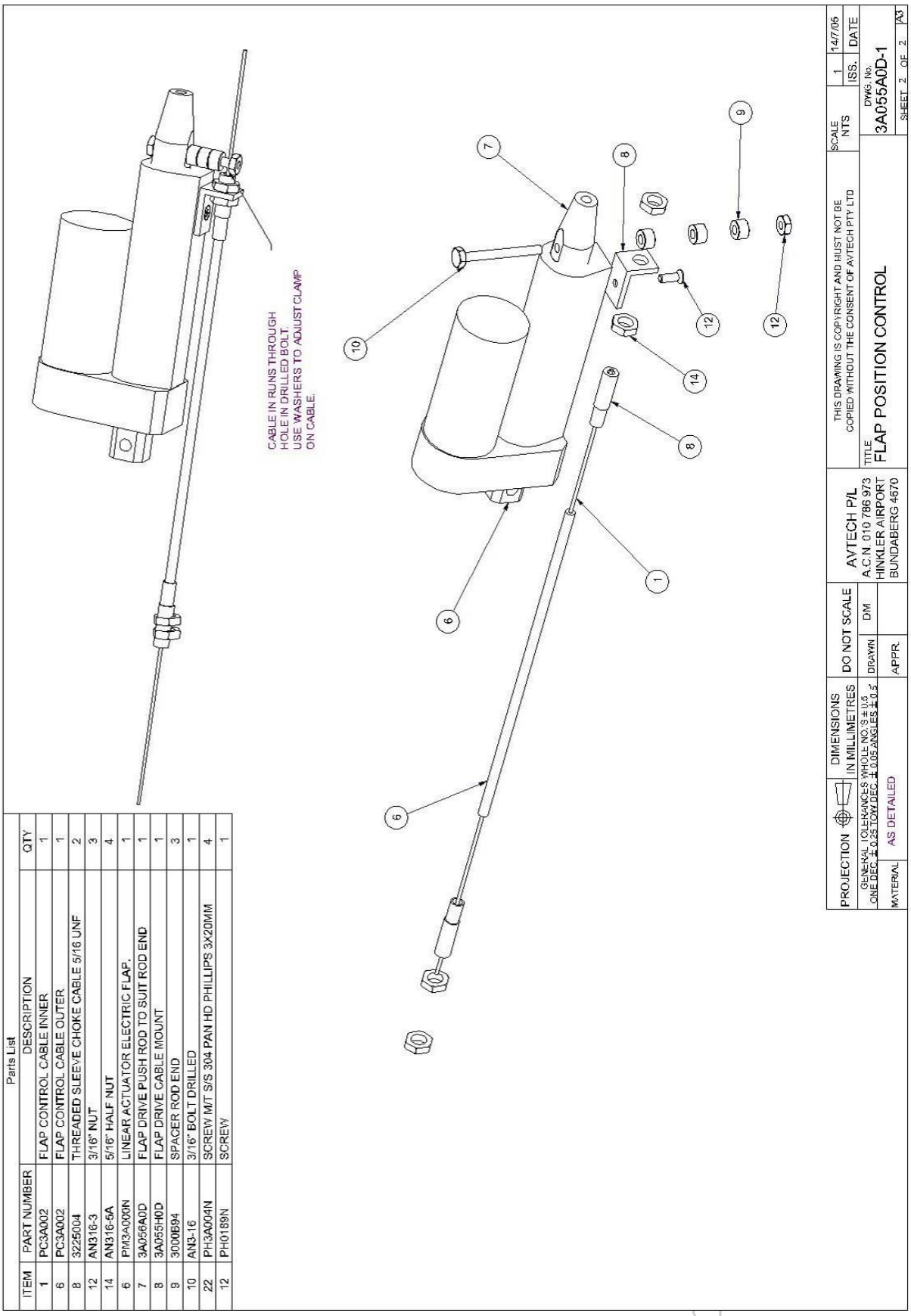
HINKLER AIRPORT
BUNDABERG 4670
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
DRAWN DM
APPR.
GENERAL TOLERANCES WHOLE NO'S ± 0.5 ONE DEC. ± 0.25 TOW DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL AS DETAILED
TITLE FLAP POSITION INDICATOR ASSY (CABLE OPERATED)
SCALE 1:1
ISS. 1
DATE 21/9/06
DWG. No.
SHEET 1 OF 1 A3

Figure 27. Flap Position Indicator


CABLE IN RUNS THROUGH HOLE IN DRILLED BOLT. USE WASHERS TO ADJUST CLAMP ON CABLE.
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | PC3A002 | FLAP CONTROL CABLE INNER | 1
6 | PC3A002 | FLAP CONTROL CABLE OUTER | 1
8 | 3225004 | THREADED SLEEVE CHOKE CABLE 5/16 UNF | 2
12 | AN316-3 | 3/16" NUT | 3
14 | AN316-5A | 5/16" HALF NUT | 4
6 | PM3A000N | LINEAR ACTUATOR ELECTRIC FLAP. | 1
7 | 3A056A0D | FLAP DRIVE PUSH ROD TO SUIT ROD END | 1
8 | 3A055H0D | FLAP DRIVE CABLE MOUNT | 1
9 | 3000B94 | SPACER ROD END | 3
10 | AN3-16 | 3/16" BOLT DRILLED | 1
22 | PH3A004N | SCREW M/T S/S 304 PAN HD PHILLIPS 3X20MM | 4
12 | PH0189N | SCREW | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
GENERAL TOLERANCES WHOLE NO.'S ± 0.5 ONE DEC. ± 0.25 TOW DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL AS DETAILED
DO NOT SCALE
DRAWN DM
APPR.
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A.C.N. 010 786 973
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TITLE
FLAP POSITION CONTROL
SCALE NTS
DWG. No. 3A055A0D-1
ISS. 1
DATE 14/7/06
SHEET 2 OF 2
A3

Figure 28. Flap Position Indicator Drive Cable Assembly

9 SECTION 9 – ELEVATOR CONTROL SYSTEM

9.1 ELEVATOR CONTROL SYSTEM

See Figures 29, 31 and Figure 32.

The elevator control system is comprised of a control column and one enclosed push-pull cable fitted with rod ends at both ends.

WARNING

All spherical bearings must be fitted with a large washer on the outside of the through-bolt to prevent the bearing case and cable releasing in the event of a bearing failure.

9.2 CONTROL COLUMN DESCRIPTION

Refer to Figure 22.

9.2.1 REMOVAL AND INSTALLATION

Refer to Paragraph 7.2.1.

9.3 ELEVATOR

The elevator comprises a Rigid Cellular Polystyrene core moulded and bonded to a composite skin and embodying a composite control horn at the centre. An elevator trim system is attached – Refer Paragraph 9.6.

9.3.1 REMOVAL AND INSTALLATION

1. Unbolt cable from control horn.
2. Unbolt trim linkage from control horn.
3. Loosen screws in hinge pin retainers and lift hinge pin retainers from hinge pins. It is not necessary to remove these parts.
4. Remove hinge pins.
5. Remove Elevator.
6. Reverse the preceding steps for installation.

9.3.2 ELEVATOR BALANCING

The J230 Elevator is balanced during construction. A standard weight of 750 grams of lead is placed in each control horn to balance the elevator. In service there should be no reason to rebalance the elevator. Balance may be checked with the control fitted to the aircraft & the control & trim removed. Measure the force at the trailing edge required to keep the elevator level. Weight & hinge moment values are given below:

Weight	5000g	+/- 100g
Hinge Moment	323300g.mm	+/- 4000g.mm

9.3.3 INSPECTION AND REPAIR

Inspect elevator for any signs of delamination or cracking. Pay particular attention to the Control Horn and hinges and their surrounding areas.

Repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

9.4 CONTROL CABLE AND ATTACHMENTS

9.4.1 REMOVAL AND INSTALLATION

The Control Cable is a Primary Control and may not be repaired or removed without reference to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

9.5 RIGGING

1. Refer to Figure 33

2. Using the factory anchor points, make sure each end of the cable is secure.

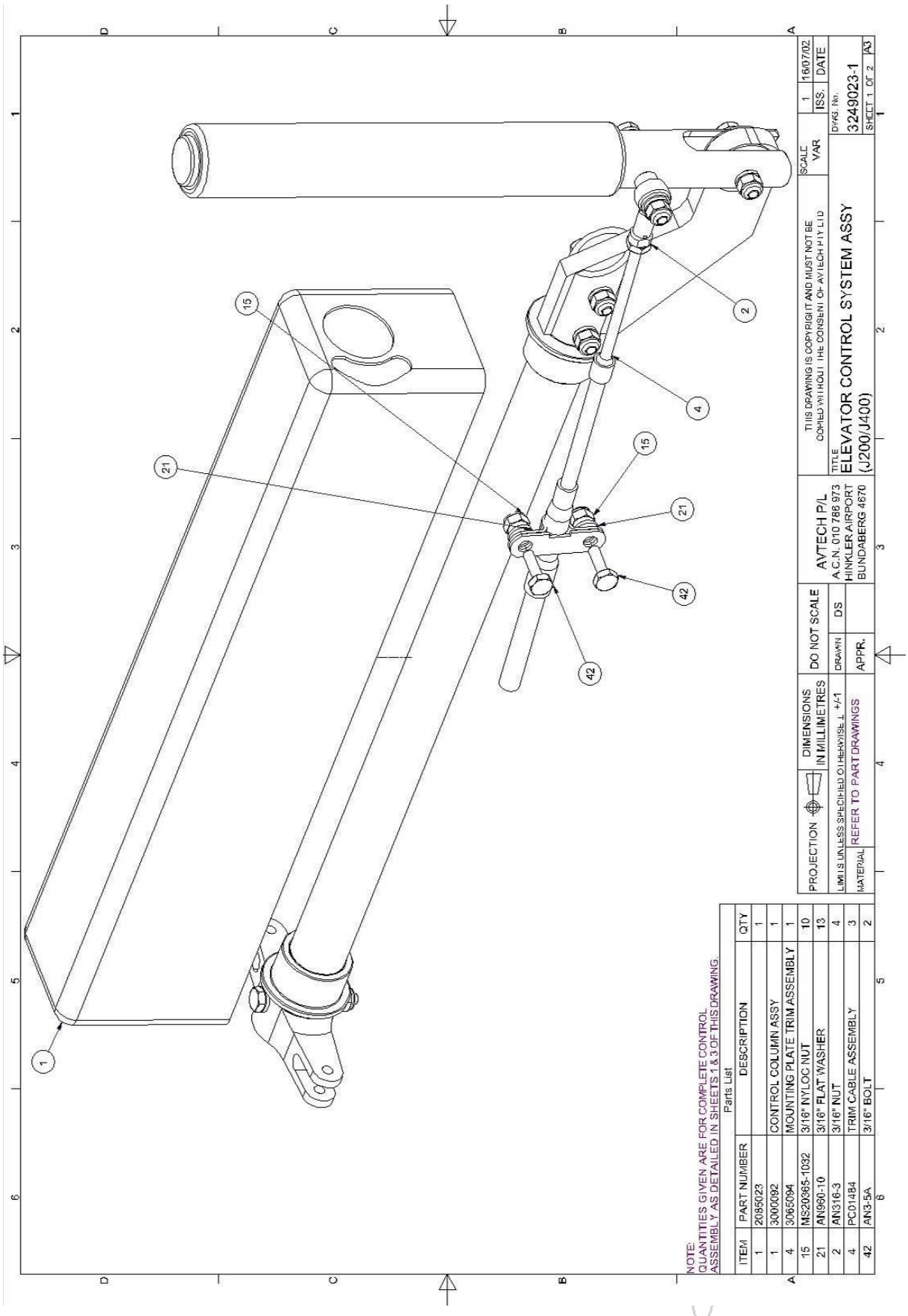
3. Set the full up travel first using the factory templates. Making sure the control column is hard back. Adjust the female ball ends in or out if adjustment is needed.

4. To establish the neutral position, align balance horn with horizontal stabiliser.

5. Adjust cable rod ends to achieve UP and DOWN travel using the Elevator Rigging Template (see Appendix 3).

6. **DO NOT** move the Cable Anchors – These are factory set.

7. Ensure lock nut is tight on rod ends and that cable is visible through hole in spherical bearing.


NOTE:
QUANTITIES GIVEN ARE FOR COMPLETE CONTROL ASSEMBLY AS DETAILED IN SHEETS 1 & 3 OF THIS DRAWING
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 2085023 | | 1
1 | 3000092 | CONTROL COLUMN ASSY | 1
4 | 3065094 | MOUNTING PLATE TRIM ASSEMBLY | 1
15 | MS20365-1032 | 3/16" NYLOC NUT | 10
21 | AN960-10 | 3/16" FLAT WASHER | 13
2 | AN316-3 | 3/16" NUT | 4
4 | PC01484 | TRIM CABLE ASSEMBLY | 3
42 | AN3-5A | 3/16" BOLT | 2
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE +/-1
MATERIAL
REFER TO PART DRAWINGS
DRAWN
DS
APPR.
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HINKLER AIRPORT
BUNDABERG 4670
TITLE
ELEVATOR CONTROL SYSTEM ASSY
(J200/J400)
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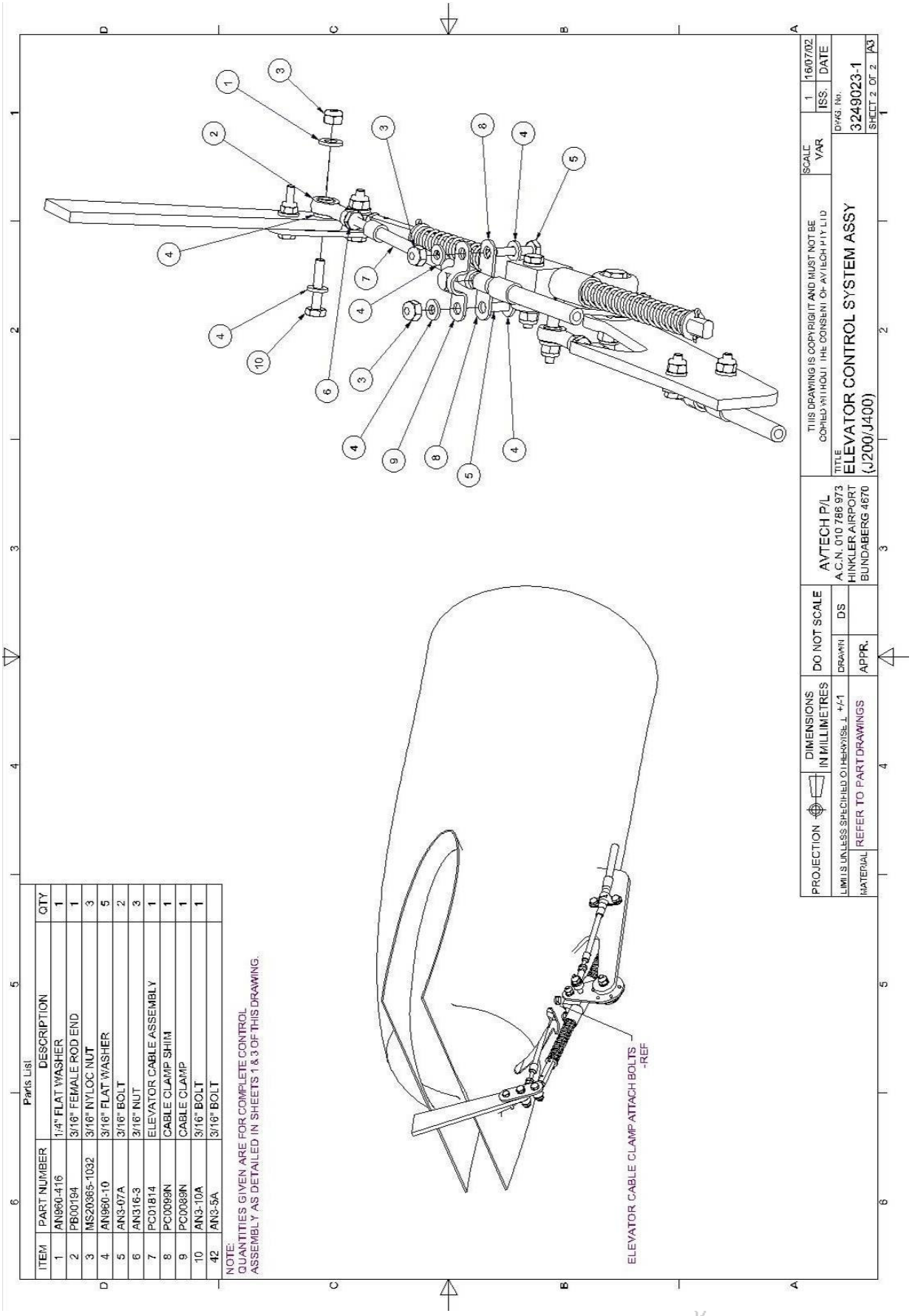
SCALE VAR
DWG. No.
3249023-1
SHEET 1 OF 2
A3
ISS.
1
DATE
16/07/02

Figure 29. Elevator Control Assy


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | AN960-416 | 1/4" FLAT WASHER | 1
2 | PB00194 | 3/16" FEMALE ROD END | 1
3 | MS20365-1032 | 3/16" NYLOC NUT | 3
4 | AN960-10 | 3/16" FLAT WASHER | 5
5 | AN3-07A | 3/16" BOLT | 2
6 | AN316-3 | 3/16" NUT | 3
7 | PC01814 | ELEVATOR CABLE ASSEMBLY | 1
8 | PC0099N | CABLE CLAMP SHIM | 1
9 | PC0089N | CABLE CLAMP | 1
10 | AN3-10A | 3/16" BOLT | 1
42 | AN3-5A | 3/16" BOLT
NOTE:
QUANTITIES GIVEN ARE FOR COMPLETE CONTROL ASSEMBLY AS DETAILED IN SHEETS 1 & 3 OF THIS DRAWING.
ELEVATOR CABLE CLAMP ATTACH BOLTS -REF
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TITLE
ELEVATOR CONTROL SYSTEM ASSY (J200/J400)
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
DO NOT SCALE
DRAWN DS
APPR.
DIMENSIONS IN MILLIMETRES
PROJECTION
LIMITS UNLESS SPECIFIED OTHERWISE ± +/-1
MATERIAL REFER TO PART DRAWINGS
SCALE VAR
DWG No. 3249023-1
ISS. 1 DATE 16/07/02
SHEET 2 OF 2 A3

Figure 30: Elevator Control Assy Rear.

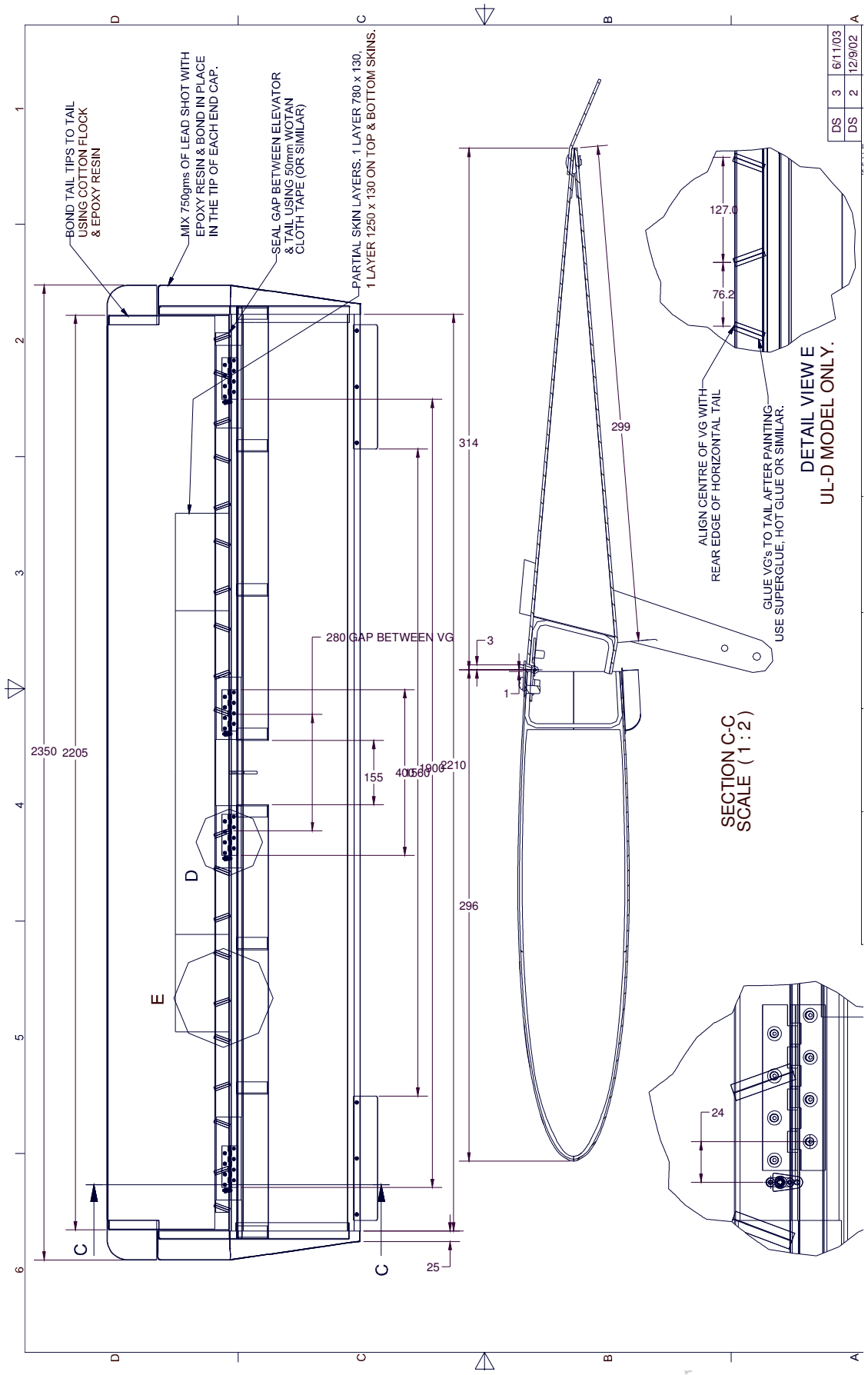
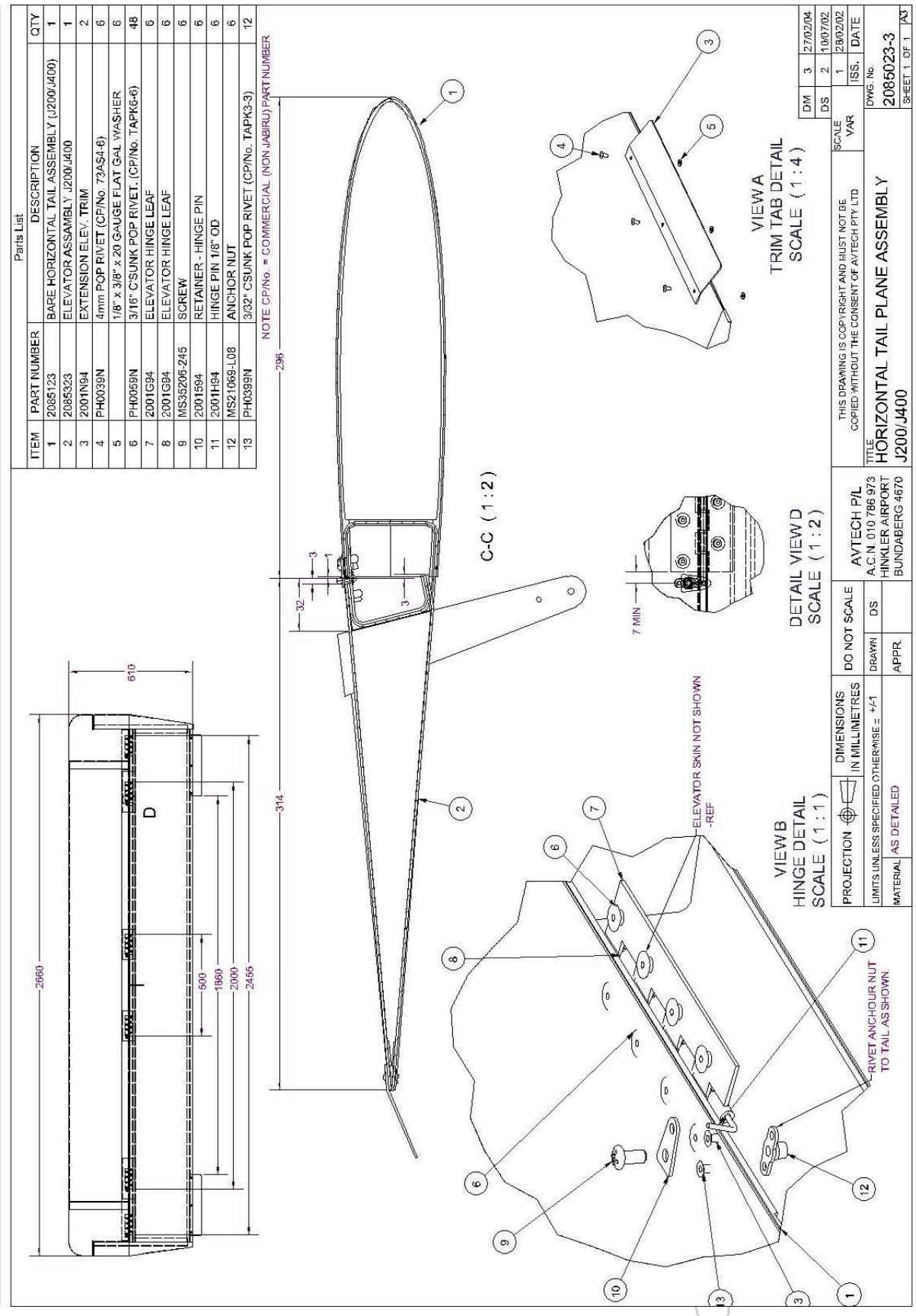


Figure 31. J230 Models - Horizontal Tail & Elevator Assy


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 2085123 | BARE HORIZONTAL TAIL ASSEMBLY (J200/J400) | 1
2 | 2085323 | ELEVATOR ASSAMBLY J200/J400 | 1
3 | 2001N94 | EXTENSION ELEV. TRIM | 2
4 | PH0039N | 4mm POP RIVET (CP/No. 73AS4-6) | 6
5 | | 1/8" x 3/8" x 20 GAUGE FLAT GAL WASHER | 6
6 | PH0059N | 3/16" C'SUNK POP RIVET. (CP/No. TAPK6-6) | 48
7 | 2001G94 | ELEVATOR HINGE LEAF | 6
8 | 2001G94 | ELEVATOR HINGE LEAF | 6
9 | MS35206-245 | SCREW | 6
10 | 2001594 | RETAINER - HINGE PIN | 6
11 | 2001H94 | HINGE PIN 1/8" OD | 6
12 | MS21069-L08 | ANCHOR NUT | 6
13 | PH0399N | 3/32" CSUNK POP RIVET (CP/No. TAPK3-3) | 12
NOTE CP/No. = COMMERCIAL (NON JABIRU) PART NUMBER
VIEW A
TRIM TAB DETAIL
SCALE (1 : 4)
C-C (1 : 2)
DETAIL VIEW D
SCALE (1 : 2)
VIEW B
HINGE DETAIL
SCALE (1 : 1)
ELEVATOR SKIN NOT SHOWN -REF
RIVET ANCHOUR NUT TO TAIL AS SHOWN
296
314
32
7 MIN
610
2660
500
1860
2000
2455
D
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TITLE
HORIZONTAL TAIL PLANE ASSEMBLY
J200/J400
SCALE VAR
DWG. No. 2085023-3
SHEET 1 OF 1 A3
DM 3 27/02/04
DS 2 10/07/02
ISS. 1 28/02/02
DATE
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE = +/-1
DRAWN DS
APPR.
MATERIAL AS DETAILED
AVTECH P/L
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HINKLER AIRPORT
BUNDABERG 4670

Figure 32. J170 Models - Horizontal Tail & Elevator Assy

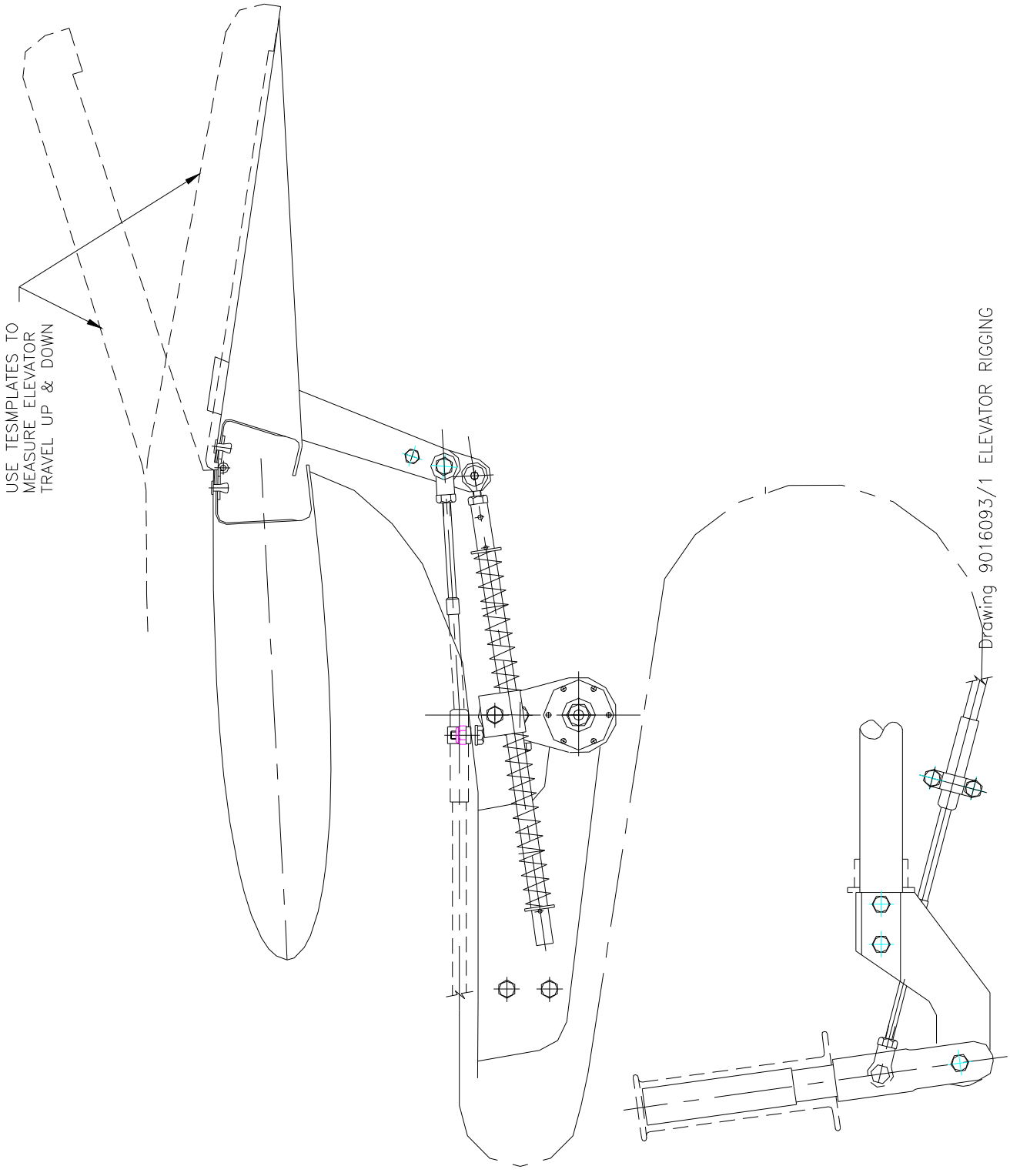


Figure 33. Elevator Travel Limits

9.6 ELEVATOR TRIM CONTROL SYSTEM

See Figure 35.

The elevator trim control system comprises a Trim Cable connected to a lubron block, so that the cable is able to move the block fore and aft approximately 35mm. An aluminium rod is free to slide through this lubron block and is centred by 2 compression springs. The output end of the rod is connected to the Elevator Horn.

9.6.1 OPERATIONAL CHECK

Movement of the Trim Lever FORE and AFT should result in movement of the Main Control FORE and AFT and movement of the Elevator UP and DOWN.
See Figure 34.

WARNING

It is important to carry out this operational check whenever the trim cable has been disconnected to ensure it has been correctly installed.

9.6.2 TRIM HANDLE ASSEMBLY

See Figure 34.

9.6.3 CONTROL CABLE AND ATTACHMENTS

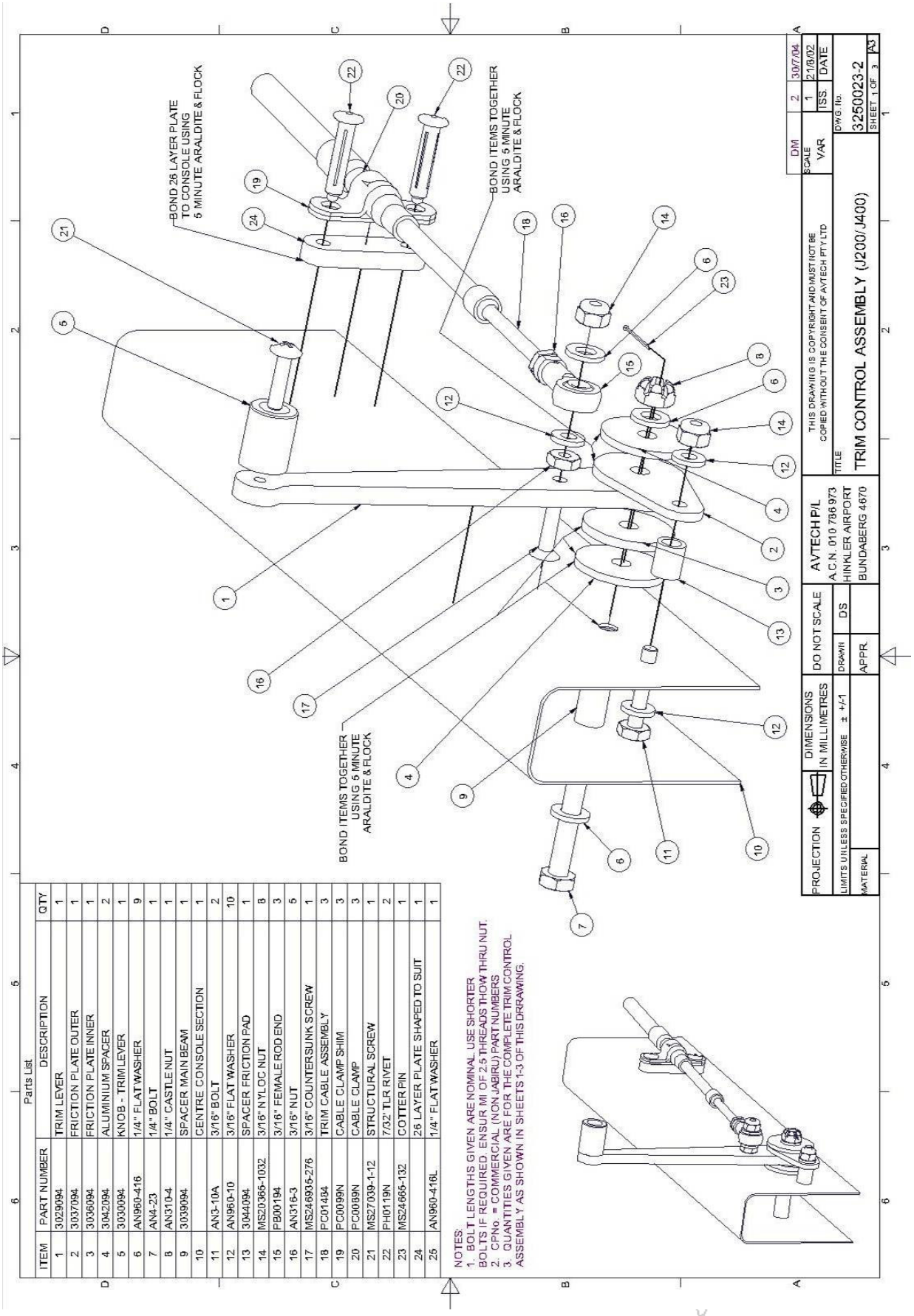
The control cable is of the enclosed push-pull type with the cable bolted directly to the Trim Horn Extension at the rear end and to the trim control lever at the lever end. To operate, outer covers of the cable must be clamped firmly at both ends.

9.6.4 REMOVAL AND INSTALLATION

The Trim Control Cable is a Primary Control and may not be repaired or removed without reference to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

9.6.5 INSPECTION AND REPAIR

Inspect Trim system generally for security and any signs of wear. Pay particular attention to the bearing blocks, friction plates, bearing, springs, cable and attachments.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 3029094 | TRIM LEVER | 1
2 | 3037094 | FRICTION PLATE OUTER | 1
3 | 3036094 | FRICTION PLATE INNER | 1
4 | 3042094 | ALUMINIUM SPACER | 2
5 | 3030094 | KNOB - TRIMLEVER | 1
6 | AN960-416 | 1/4" FLAT WASHER | 9
7 | AN4-23 | 1/4" BOLT | 1
8 | AN310-4 | 1/4" CASTLE NUT | 1
9 | 3039094 | SPACER MAIN BEAM | 1
10 | | CENTRE CONSOLE SECTION | 1
11 | AN3-10A | 3/16" BOLT | 2
12 | AN960-10 | 3/16" FLAT WASHER | 10
13 | 3044094 | SPACER FRICTION PAD | 1
14 | MS20365-1032 | 3/16" N'LOC NUT | 8
15 | PB00194 | 3/16" FEMALE ROD END | 3
16 | AN316-3 | 3/16" NUT | 6
17 | MS24693S-276 | 3/16" COUNTERSUNK SCREW | 1
18 | PC01484 | TRIM CABLE ASSEMBLY | 1
19 | PC0099N | CABLE CLAMP SHIM | 3
20 | PC0089N | CABLE CLAMP | 3
21 | MS27039-1-12 | STRUCTURAL SCREW | 3
22 | PH0119N | 7/32" TLR RIVET | 1
23 | MS24665-132 | COTTER PIN | 2
24 | | 2.6 LAYER PLATE SHAPED TO SUIT | 1
25 | AN960-416L | 1/4" FLAT WASHER | 1
BOND 26 LAYER PLATE TO CONSOLE USING 5 MINUTE ARALDITE & FLOCK
BOND ITEMS TOGETHER USING 5 MINUTE ARALDITE & FLOCK
BOND ITEMS TOGETHER USING 5 MINUTE ARALDITE & FLOCK
NOTES:
1. BOLT LENGTHS GIVEN ARE NOMINAL. USE SHORTER BOLTS IF REQUIRED. ENSURE MIN OF 2.5 THREADS THOW THRU NUT.
2. CPNo. = COMMERCIAL (NON JABIRU) PART NUMBERS
3. QUANTITIES GIVEN ARE FOR THE COMPLETE TRIM CONTROL ASSEMBLY AS SHOWN IN SHEETS 1-3 OF THIS DRRAWING.
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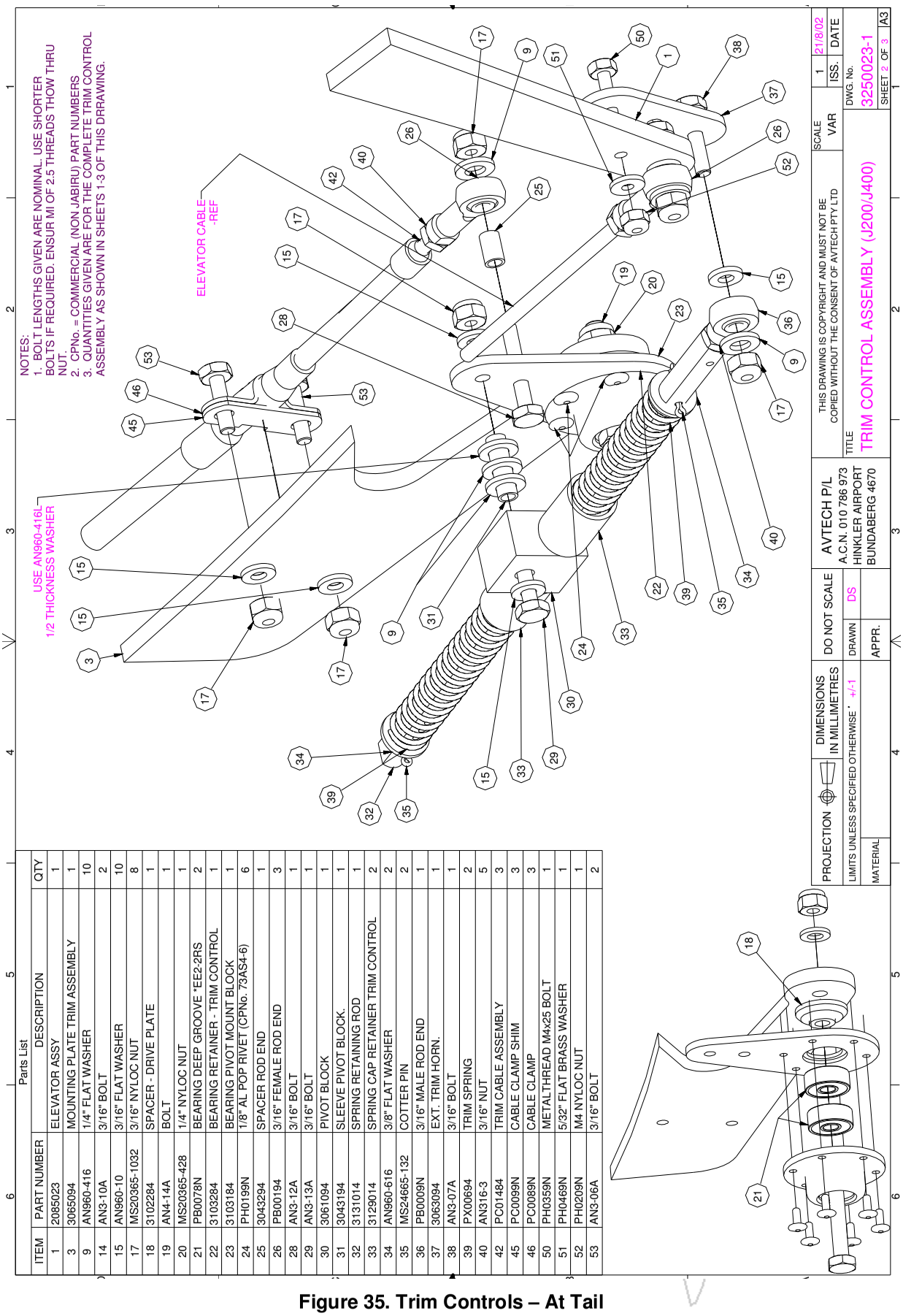
TITLE
TRIM CONTROL ASSEMBLY (J200/ J400)
DWG No. 3250023-2
SHEET 1 OF 3 A3
SCALE VAR
ISS 2 1
DATE 30/7/04 21/8/02
DM
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE ± +/-1
MATERIAL
DRAWN DS
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670

Figure 34. Elevator Trim Handle Assy


NOTES:
1. BOLT LENGTHS GIVEN ARE NOMINAL. USE SHORTER BOLTS IF REQUIRED. ENSUR MI OF 2.5 THREADS THOW THRU NUT.
2. CPNo. = COMMERCIAL (NON JABIRU) PART NUMBERS
3. QUANTITIES GIVEN ARE FOR THE COMPLETE TRIM CONTROL ASSEMBLY AS SHOWN IN SHEETS 1-3 OF THIS DRRAWING.
ELEVATOR CABLE -REF
USE AN960-416L 1/2 THICKNESS WASHER
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 2085023 | ELEVATOR ASSY | 1
3 | 3065094 | MOUNTING PLATE TRIM ASSEMBLY | 1
9 | AN960-416 | 1/4" FLAT WASHER | 10
14 | AN3-10A | 3/16" BOLT | 2
15 | AN960-10 | 3/16" FLAT WASHER | 10
17 | MS20365-1032 | 3/16" NYLOC NUT | 8
18 | 3102284 | SPACER - DRIVE PLATE | 1
19 | AN4-14A | BOLT | 1
20 | MS20365-428 | 1/4" NYLOC NUT | 1
21 | PB0078N | BEARING DEEP GROOVE "EE2-2RS | 2
22 | 3103284 | BEARING RETAINER - TRIM CONTROL | 1
23 | 3103184 | BEARING PIVOT MOUNT BLOCK | 1
24 | PH0199N | 1/8" AL POP RIVET (CPNo. 73AS4-6) | 6
25 | 3043294 | SPACER ROD END | 1
26 | PB00194 | 3/16" FEMALE ROD END | 3
28 | AN3-12A | 3/16" BOLT | 1
29 | AN3-13A | 3/16" BOLT | 1
30 | 3061094 | PIVOT BLOCK | 1
31 | 3043194 | SLEEVE PIVOT BLOCK. | 1
32 | 3131014 | SPRING RETAINING ROD | 1
33 | 3129014 | SPRING CAP RETAINER TRIM CONTROL | 2
34 | AN960-616 | 3/8" FLAT WASHER | 2
35 | MS24665-132 | COTTER PIN | 2
36 | PB0009N | 3/16" MALE ROD END | 1
37 | 3063094 | EXT. TRIM HORN. | 1
38 | AN3-07A | 3/16" BOLT | 1
39 | PX00694 | TRIM SPRING | 2
40 | AN316-3 | 3/16" NUT | 5
42 | PC01484 | TRIM CABLE ASSEMBLY | 3
45 | PC0099N | CABLE CLAMP SHIM | 3
46 | PC0089N | CABLE CLAMP | 3
50 | PH0359N | METALTHREAD M4x25 BOLT | 1
51 | PH0469N | 5/32" FLAT BRASS WASHER | 1
52 | PH0209N | M4 NYLOC NUT | 1
53 | AN3-06A | 3/16" BOLT | 2
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
LIMITS UNLESS SPECIFIED OTHERWISE ' +/-1
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SCALE VAR
ISS. 1 DATE 21/8/02
DWG. No. 3250023-1
SHEET 2 OF 3 A3

Figure 35. Trim Controls – At Tail

10 SECTION 10 – RUDDER CONTROL SYSTEM

10.1 RUDDER PEDAL SYSTEM

Refer to Figure 36.

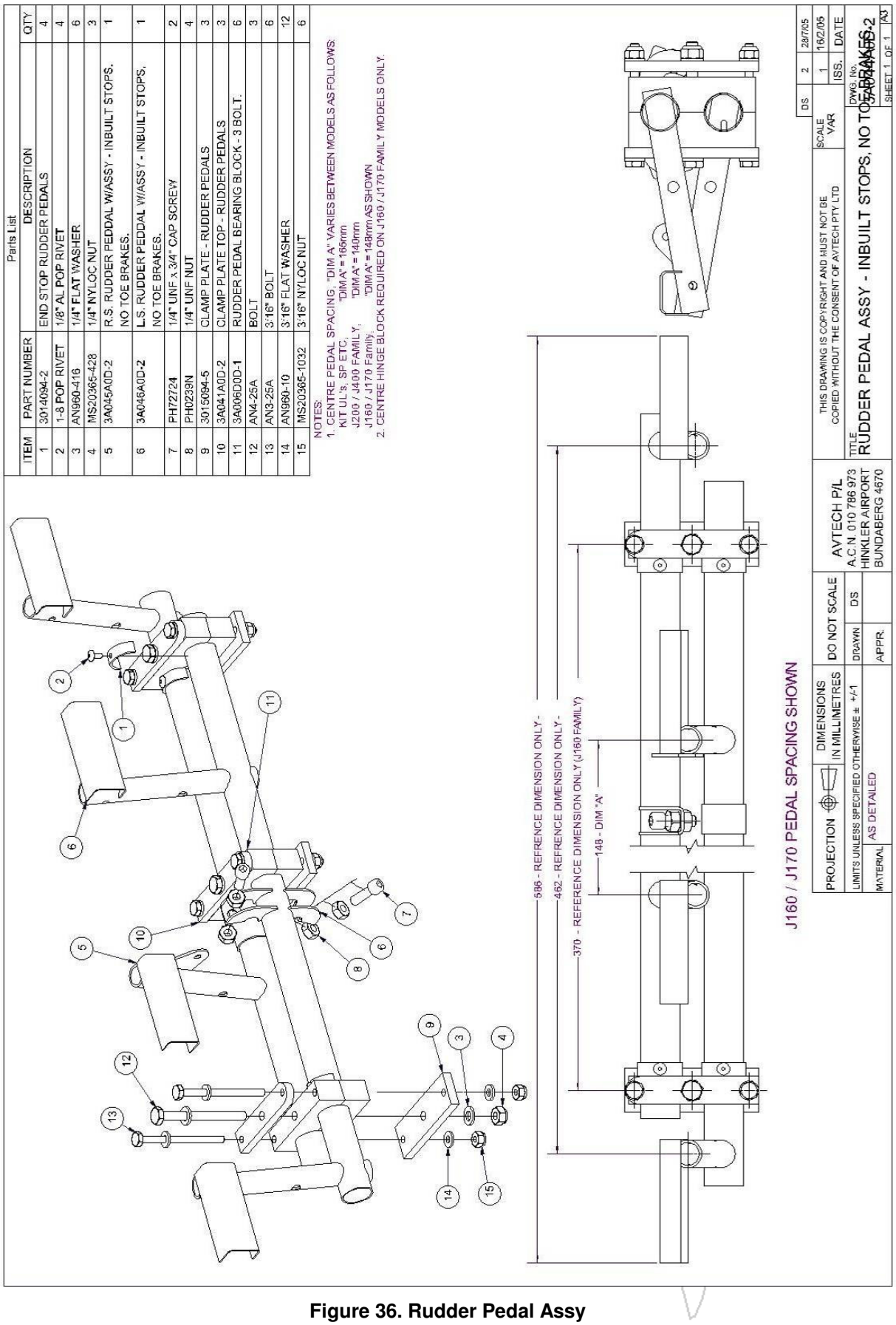
Rudder control is maintained through the use of rudder pedals which also control nose wheel steering. The system is comprised of rudder pedals, two push rods, a centering mechanism and an enclosed push-pull cable.

10.1.1 REMOVAL AND INSTALLATION

1. Unbolt push-pull cable.
2. Unbolt both steering push rods.
3. Unbolt rudder pedal bearings.
4. Remove cover plates and nylon bearings.
5. Remove both pedal bars.
6. Reverse the preceding steps for installation.

10.1.2 INSPECTION AND REPAIR

1. Inspect nylon bearings for wear. Replace if worn.
2. Inspect pedal bars for wear around bearing area and for distortion.
3. Inspect pedals for distortion or loose rivets in end stops.
4. Inspect bolt holes for wear and elongation.
5. Inspect bolts and nuts for distortion and wear.
6. Replace any distorted or worn parts.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 3014094-2 | END STOP RUDDER PEDALS | 4
2 | 1-8 POP RIVET | 1/8" AL POP RIVET | 4
3 | AN960-416 | 1/4" FLAT WASHER | 6
4 | MS20365-428 | 1/4" NYLOC NUT | 3
5 | 3A045A0D-2 | R.S. RUDDER PEDDAL W/ASSY - INBUILT STOPS. NO TOE BRAKES. | 1
6 | 3A046A0D-2 | L.S. RUDDER PEDDAL W/ASSY - INBUILT STOPS. NO TOE BRAKES. | 1
7 | PH72724 | 1/4" UNF x 3/4" CAP SCREW | 2
8 | PH0239N | 1/4" UNF NUT | 4
9 | 3015094-5 | CLAMP PLATE - RUDDER PEDALS | 3
10 | 3A041A0D-2 | CLAMP PLATE TOP - RUDDER PEDALS | 3
11 | 3A006D0D-1 | RUDDER PEDAL BEARING BLOCK - 3 BOLT. | 6
12 | AN4-25A | BOLT | 3
13 | AN3-25A | 3/16" BOLT | 6
14 | AN960-10 | 3/16" FLAT WASHER | 12
15 | MS20365-1032 | 3/16" NYLOC NUT | 6
NOTES:
1. CENTRE PEDAL SPACING, "DIM A" VARIES BETWEEN MODELS AS FOLLOWS:
KIT UL's, SP ETC, "DIM A" = 166mm
J200 / J400 FAMILY, "DIM A" = 149mm
J160 / J170 Family, "DIM A" = 148mm AS SHOWN
2. CENTRE HINGE BLOCK REQUIRED ON J160 / J170 FAMILY MODELS ONLY.
586 - REFERENCE DIMENSION ONLY -
462 - REFERENCE DIMENSION ONLY -
370 - REFERENCE DIMENSION ONLY (J160 FAMILY)
148 - DIM "A"
J160 / J170 PEDAL SPACING SHOWN
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
LIMITS UNLESS SPECIFIED OTHERWISE ± +/-1
DRAWN DS
MATERIAL AS DETAILED
APPR.
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TITLE
RUDDER PEDAL ASSY - INBUILT STOPS. NO TOE BRAKES
SCALE VAR
DWG. No. 3A044A0D-2
ISS. 2 28/7/05
ISS. 1 16/2/05
DATE
SHEET 1 OF 1 A3

Figure 36. Rudder Pedal Assy

10.2 RUDDER

See Figures 37 and 38.

10.2.1 REMOVAL & INSTALLATION

1. Unbolt push-pull cable from rudder horn.

2. Loosen screws in hinge pin retainers & lift retainer from hinge pin. It is not necessary to remove these parts.

3. Remove hinge pins.

4. Remove rudder.

5. Reverse the preceding steps for installation.

10.2.2 INSPECTION & REPAIR

Inspect rudder for any signs of delamination or cracking. Pay particular attention to the Control Horn and hinges and their surrounding areas.

Repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

10.3 CONTROL CABLE & ATTACHMENTS

The control cable is of the push-pull type fitted with spherical bearings at both ends.
To operate, the outer cover of the cable must be clamped firmly at each end.

10.3.1 REMOVAL & INSTALLATION

The Control Cable is a Primary Control and may not be repaired or removed without reference to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

10.4 RUDDER BALANCE

The rudder is balanced at the factory during assembly and unless the rudder is damaged the balance should not change. If the rudder is found to be unbalanced outside the specified limits cause for this condition should be ascertained before proceeding.

To balance the rudder it must be removed from the aircraft. Balancing is done around the rudder hinges with the hinge pin line horizontal and on the high side of the rudder. The balance weight takes the form of a epoxy resin and lead shot mixture set inside the leading edge of the rudder horn. The balance should be changed by either removing lead or adding to this mass with a similar mixture. The hinge moment can be measured using masses on the trailing edge or by measuring the force needed to maintain the rudder for/aft centreline horizontal.

Weight and moment values are given below:

Weight	2200g	+/- 100g
Hinge Moment	56300g.mm	+/- 4000g.mm

10.5 RIGGING

1. To establish the neutral position, raise the nose wheel off the ground by leaning down on the horizontal stabiliser.

2. Allow the nose wheel (and therefore the rudder pedals) to centralise.

3. Align the rudder 5mm to the right at the top of the rudder when referenced to the lower lip of the fin.

4. Adjust the rod ends on the cable so that the hole in the rear rod end aligns with the hole in the control horn.

5. Fit bolt, nut and washers.

6. Scribe a line from the centre of the Rudder trailing edge onto the Fuselage. Displace the Right Rudder Pedal to the Rudder Pedal Stop. Measure the Rudder displacement at the Rudder trailing edge with reference to the previously scribed line. It should be 98mm +/- 2mm.

7. Repeat Step 6 for Left Pedal and adjust Rudder Pedal Stops as required.

WARNING

The Rudder Pedal Stops should engage – NOT the Control Surface Stops on the tail.

DO NOT move the Cable Anchor Points or adjust control surface stops – These are factory set.

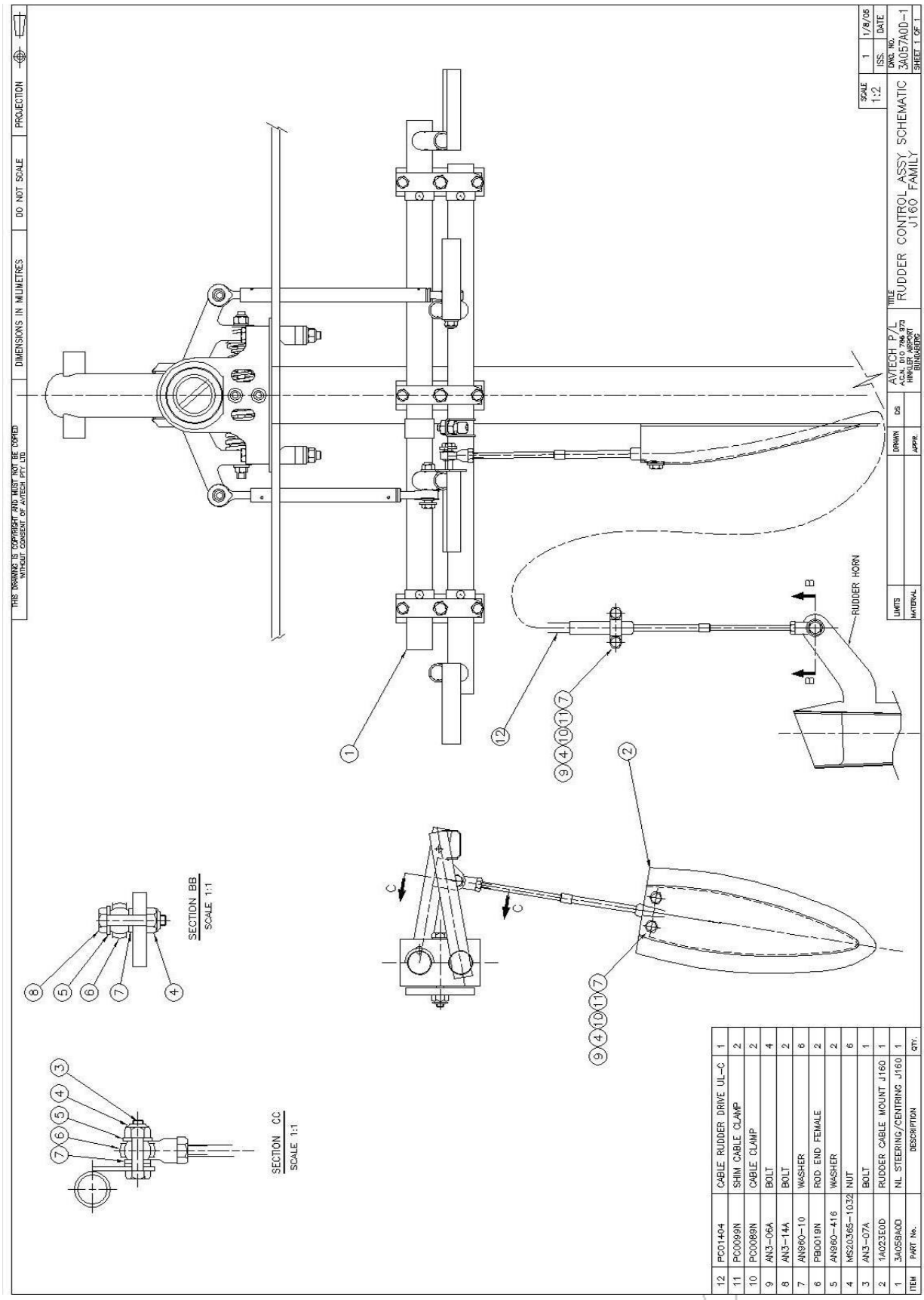


Figure 37. Rudder System Schematic

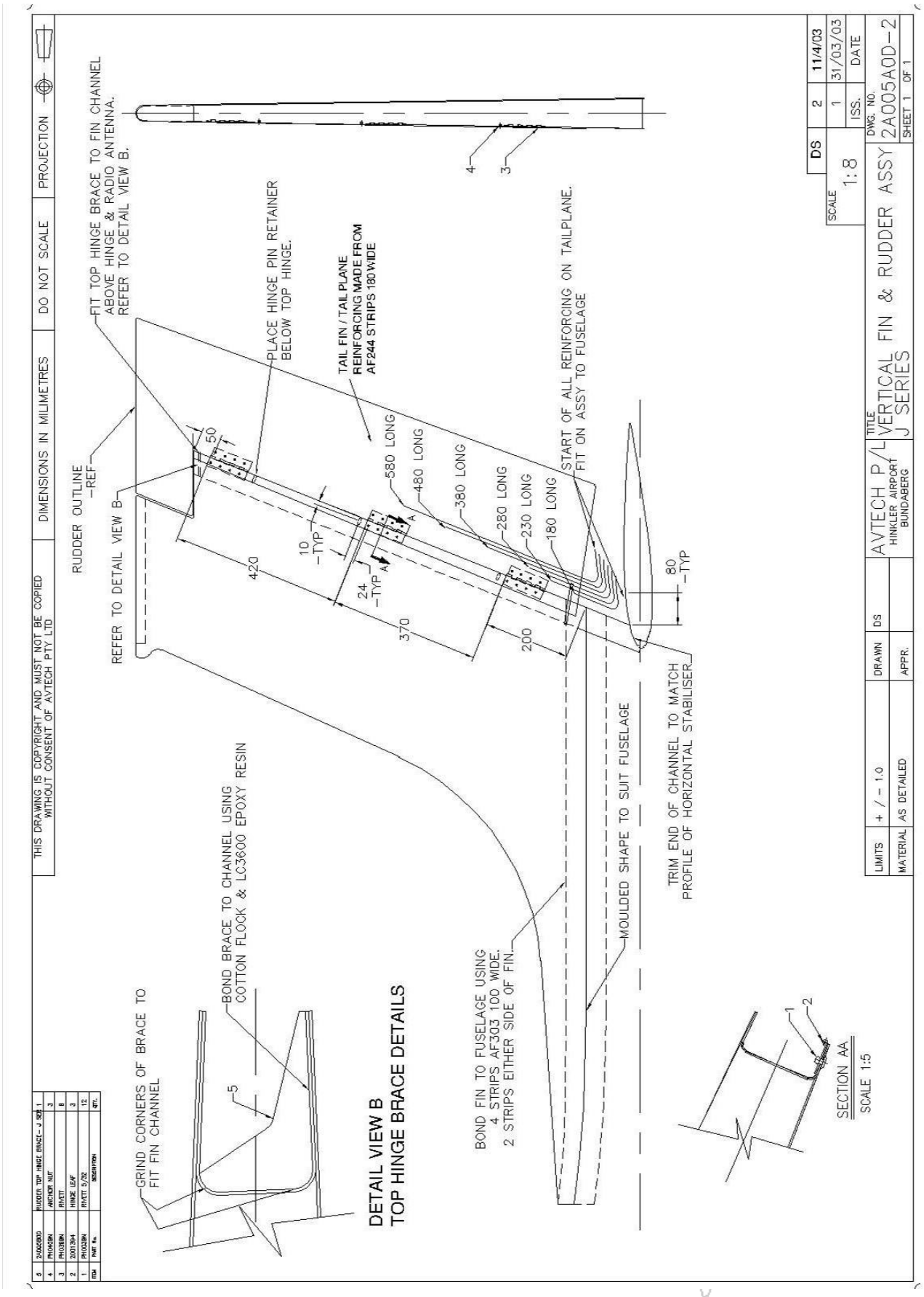


Figure 38. Rudder Installation

11 Section 11 – Engine & Engine Installation

11.1 ENGINE COWLS

The engine cowls comprise both an Upper and Lower composite structure.

The Upper Cowl is fitted with five locating Cam Locks, two at the front & three at the rear of the cowlings. Hinges run along the join line on either side, holding the top & bottom together. The Lower Cowl is attached to the Fuselage with 8 machine screws mounting into anchor nuts.

11.1.1 ENGINE COWLS – REMOVAL & INSTALLATION

11.1.1.1 UPPER COWL

Refer to Figure 39.

1. Remove the Cam Locks from the front & rear of the cowling.
2. Remove Hinge Pin.
3. Grasping the cowl around the front nose, pull carefully upwards.
4. Remove the cowl.
5. Replace the cam locks in the cowling to ensure they are not misplaced.

NOTE:

Always ensure that the cowl is placed in a position where it can not be damaged by persons walking around the aircraft or by wind.

6. Reverse the preceding steps for installation.

WARNING

Ensure the cam locks are properly engaged before starting engine.

11.1.1.2 LOWER COWL

Refer to Figure 40.

1. Remove the top cowl – Refer above.
2. Disconnect the engine air inlet SCAT hose and cabin heat inlet hose (if fitted)
3. Remove lower cowl screws at rear of cowl.
4. Reverse the preceding steps for installation.

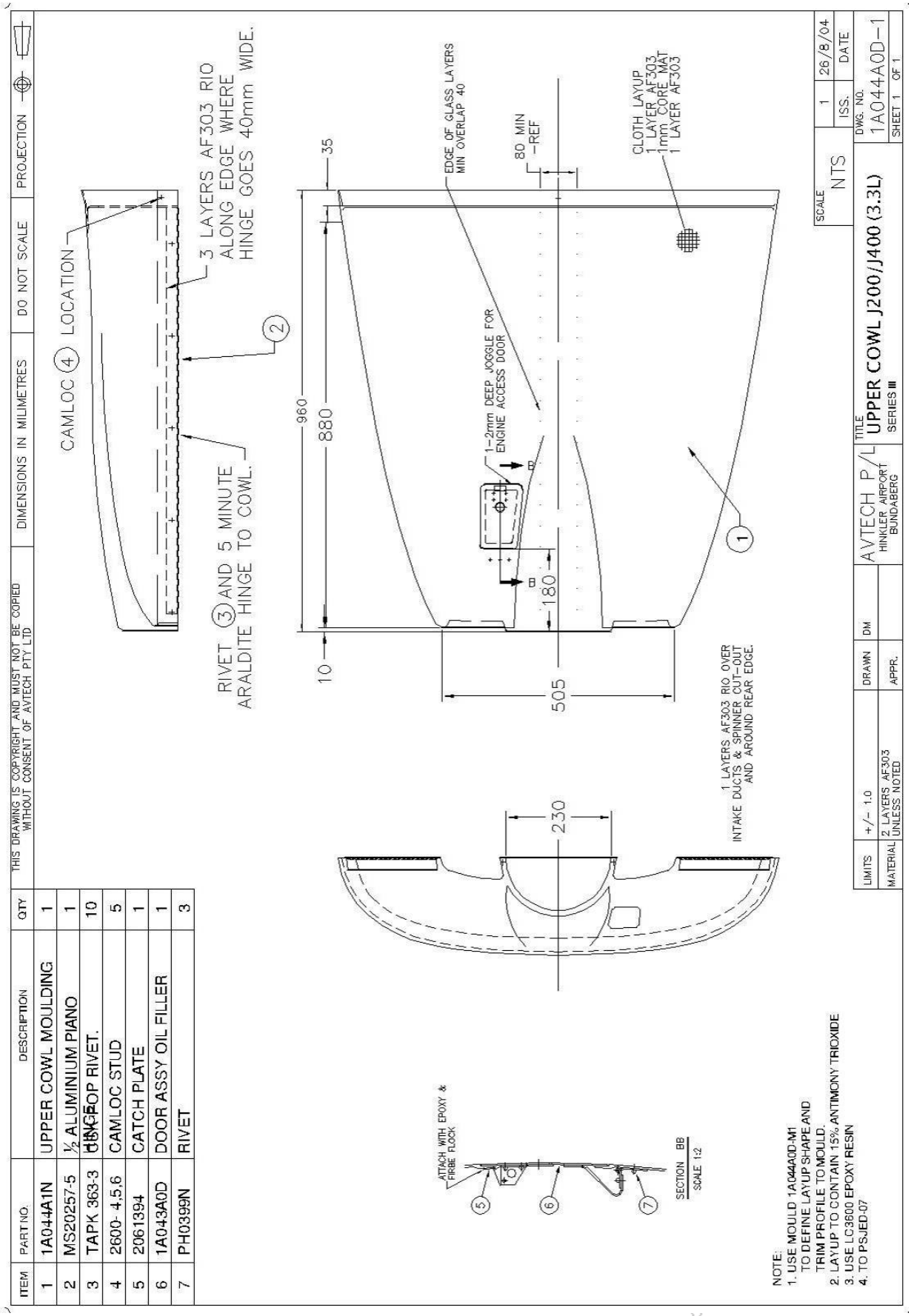
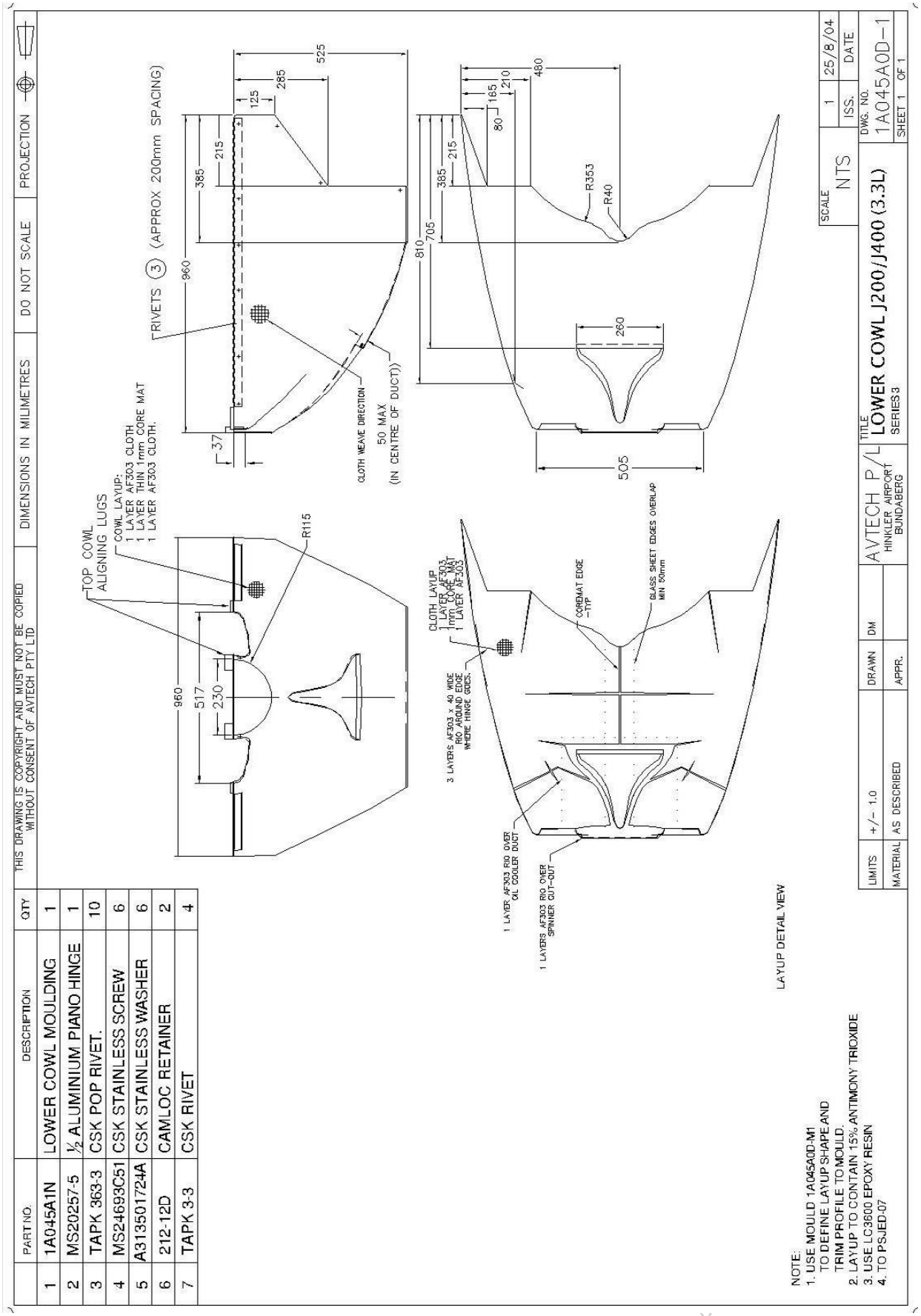

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
ITEM | PART NO. | DESCRIPTION | QTY
1 | 1A044A1N | UPPER COWL MOULDING | 1
2 | MS20257-5 | ½ ALUMINIUM PIANO | 1
3 | TAPK 363-3 | CSK TOP RIVET. | 10
4 | 2600- 4.5.6 | CAMLOC STUD | 5
5 | 2061394 | CATCH PLATE | 1
6 | 1A043A0D | DOOR ASSY OIL FILLER | 1
7 | PH0399N | RIVET | 3
CAMLOC (4) LOCATION
3 LAYERS AF303 RIO ALONG EDGE WHERE HINGE GOES 40mm WIDE.
RIVET (3) AND 5 MINUTE ARALDITE HINGE TO COWL.
EDGE OF GLASS LAYERS MIN OVERLAP 40
80 MIN -REF
CLOTH LAYUP 1 LAYER AF303 1mm CORE MAT 1 LAYER AF303
1-2mm DEEP JOGGLE FOR ENGINE ACCESS DOOR
35
960
880
10
180
505
230
1 LAYERS AF303 RIO OVER INTAKE DUCTS & SPINNER CUT-OUT AND AROUND REAR EDGE.
ATTACH WITH EPOXY & FIRBE FLOCK
SECTION BB SCALE 1:2
NOTE:
1. USE MOULD 1A044A0D-M1 TO DEFINE LAYUP SHAPE AND TRIM PROFILE TO MOULD.
2. LAYUP TO CONTAIN 15% ANTIMONY TRIOXIDE
3. USE LC3600 EPOXY RESIN
4. TO PSJED-07
LIMITS +/- 1.0
MATERIAL 2 LAYERS AF303 UNLESS NOTED
DRAWN DM
APPR.
AVTECH P/L HINKLER AIRPORT BUNDABERG
TITLE UPPER COWL J200/J400 (3.3L) SERIES III
SCALE NTS
ISS. 1 26/8/04
DWG. NO. 1A044A0D-1
SHEET 1 OF 1

Figure 39. Upper Cowl Assy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DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
PART NO. | DESCRIPTION | QTY
1 | 1A045A1N | LOWER COWL MOULDING | 1
2 | MS20257-5 | ½ ALUMINIUM PIANO HINGE | 1
3 | TAPK 363-3 | CSK POP RIVET. | 10
4 | MS24693C51 | CSK STAINLESS SCREW | 6
5 | A313501724A | CSK STAINLESS WASHER | 6
6 | 212-12D | CAMLOC RETAINER | 2
7 | TAPK 3-3 | CSK RIVET | 4
RIVETS (3) (APPROX 200mm SPACING)
TOP COWL ALIGNING LUGS
COWL LAYUP-
1 LAYER AF303 CLOTH
1 LAYER THIN 1mm CORE MAT
1 LAYER AF303 CLOTH.
CLOTH WEAVE DIRECTION
50 MAX
(IN CENTRE OF DUCT))
CLOTH LAYUP
1 LAYER AF303
1mm CORE MAT
1 LAYER AF303
3 LAYERS AF303 x 40 WIDE R/O AROUND EDGE WHERE HINGE GOES.
COREMAT EDGE -TYP
GLASS SHEET EDGES OVERLAP MIN 50mm
1 LAYER AF303 R/O OVER OIL COOLER DUCT
1 LAYERS AF303 R/O OVER SPINNER CUT-OUT
LAYUP DETAIL VIEW
NOTE:
1. USE MOULD 1A045A0D-M1 TO DEFINE LAYUP SHAPE AND TRIM PROFILE TO MOULD.
2. LAYUP TO CONTAIN 15% ANTIMONY TRIOXIDE
3. USE LC3600 EPOXY RESIN
4. TO PSJED-07
LIMITS | +/- 1.0
MATERIAL | AS DESCRIBED
DRAWN | DM
APPR.
AVTECH P/L
HINKLER AIRPORT
BUNDABERG
TITLE
LOWER COWL J200/J400 (3.3L)
SERIES 3
SCALE NTS
ISS. 1 25/8/04
DWG. NO. 1A045A0D-1
SHEET 1 OF 1

Figure 40. Lower Cowl Assy

11.1.2 CLEANING AND INSPECTION

1. Wipe the inner surfaces of the cowlings with a cloth saturated with Mineral Turpentine.

2. Wash with a solution of mild soap and water and rinse thoroughly. After cleaning, inspect for dents, burns, rubbing marks, cracks and any signs of delamination.

3. Inspect cowling camloc mounts for rigidity & bonding & for wear. Inspect locking pins for damage. Inspect rubber grommets in firewall for wear or damage.

4. Replace any damaged or worn parts with new parts.

11.1.3 REPAIR

Repair is limited to replacement cam locks. Rivets fixing cam lock anchor lugs should be backed with washers.

11.2 ENGINE

The engine is a JABIRU, 6-cylinder, 4-stroke, air-cooled, driving a fixed-pitch wooden propeller. The front Starboard cylinder is numbered 1, the front Port is numbered 2, the centre Starboard is numbered 3, the centre Port is numbered 4, the rear Starboard is numbered 5 and the rear Port cylinder is numbered 6.

Refer to Engine Instruction & Maintenance Manual for detailed engine data.

For repair & overhaul of the engine, refer to the applicable publication issued by Jabiru Aircraft Pty Ltd.

11.2.1 ENGINE DATA

Refer Engine Instruction & Maintenance Manual

11.2.2 ENGINE TROUBLE SHOOTING

Refer Engine Instruction & Maintenance Manual

11.2.3 ENGINE CLEANING

Refer Section 3.3

11.2.4 ENGINE ACCESSORIES REMOVAL

Removal of engine accessories for inspection involves stripping the engine of parts, accessories & components as appropriate. During removal of all parts, carefully examine & tag defective parts for repair or replacement with a new part.

NOTE:

All openings exposed by the removal of an item should be closed by installing a suitable cover or cap over the opening. This will prevent the entry of foreign particles. If suitable covers are not available, tape should be used to cover the opening.

11.2.5 INSPECTION

For specific items to be inspected and for periodic inspection details, refer to Engine Instruction & Maintenance Manual.

1. Visually inspect the engine for loose bolts, nuts, cracks, leaks & cooling fin damage.

2. Inspect baffles, baffle seals & brackets for cracks, deterioration or damage.

3. Inspect hoses for internal swelling, chafing, cuts, breaks, stiffness or loose connections. Excessive heat on hoses will cause them to become brittle & easily broken. Hoses are most likely to crack or break near the ends & at support points. Check fire sleeves on fuel lines within the engine compartment.

NOTE:

Avoid excessive flexing & sharp bends when examining hoses for stiffness.

4. All flexible hoses in the engine compartment should be replaced at engine overhaul or every 2 years whichever comes first. Hoses which show visible deterioration (cracking, excessive hardening) should be replaced immediately, irrespective of age.

5. For major engine repairs, refer to JABIRU AIRCRAFT Pty Ltd or an Approved Jabiru Service Centre.

11.2.5.1 FLEXIBLE HOSES

Leak Test

- After each 100 hours of operation, flexible hoses should be checked for leaks.
- Examine the exterior of hoses for evidence of leakage or wetness.
- Replace any doubtful hoses.

Replacement

- Hoses should not be twisted on installation.
- Provide as large a bend radius as possible.
- Hoses should have a minimum of 12mm clearance from other hoses or surrounding objects or be tie-clamped to them.

NOTE:

Rubber hoses will take a permanent set during extended use in service. Straightening a hose with a bend having a permanent set will result in hose cracking. Care should be taken during removal so that hose is not bent excessively, and during reinstallation to assure hose is returned to its original position.

11.3 COOLING AIR BAFFLES

The baffles installed around the engine direct the cooling air flow to the oil cooler and to other engine components to provide optimum engine cooling. The baffles, air inlets and outlets and air scoops are accurately positioned to maintain engine cooling efficiency and their removal will cause improper air circulation and engine overheating.

11.3.1 CLEANING AND INSPECTION

Engine baffles should be cleaned with a suitable solvent (Mineral Turpentine) to remove dirt and oil. Inspect baffles for cracks, splits or damage. Replace defective parts.

11.3.2 COOLING AIR BAFFLE REMOVAL & INSTALLATION

Baffles are removed by unbolting from the engine and removing tension springs and their attaching wires.

Reverse the preceding steps for installation.

11.3.3 REPAIR

Repair of baffles is limited to the replacement of rubber seals. Rubber seals may be replaced by removing the existing rubber parts, rubbing back the bonding face of the fiberglass baffles to bare glass (using 80 grit sandpaper or similar) and bonding new rubber strips in place with 5-Minute Araldite.

11.4 ENGINE MOUNT

The engine mount is a welded assembly. Its purpose is to support the engine and attach the engine to the airframe. The engine is attached to the mount with rubber cushions which absorb engine vibrations.

Spaces are used to correctly align the engine. Ensure that they are correctly marked on removal and correctly replaced on reassembly.

IMPORTANT

The engine mounts should not be repaired. If damaged, replace with a new part.

The bolts on the engine mount must only be fitted with high temperature nuts. DO NOT USE NYLOC NUTS as the nylon insert may melt causing failure.

11.5 ENGINE FUEL SYSTEM

11.5.1 FUEL SYSTEM GENERAL

The engine is equipped with a carburettor mounted below the engine and a fuel pump at the Starboard rear of the engine. Refer to engine Maintenance & instruction manual for carburettor jet removal, idle adjustment and carburettor bowl cleaning procedures.

WARNING

Fuel lines within the engine compartment are fitted with fireproof sleeves. These sleeves must not be removed.

11.5.2 LSA AIRCRAFT FUEL SYSTEM

1. A schematic drawing of the system is shown as Figure 46

2. The fuel filter and auxiliary electronic fuel pump are mounted inside the header tank enclosure.

3. The low fuel pressure switch is located in the fuel line between the mechanical engine fuel pump and the carbuettor.

4. All fuel lines inside the cabin are housed within plastic sheath. This sheathing must be maintained in good condition.

5. The main fuel valve is located on the Main Beam in the cabin.

11.6 SPARK PLUGS

Refer to Engine Instruction & Maintenance Manual

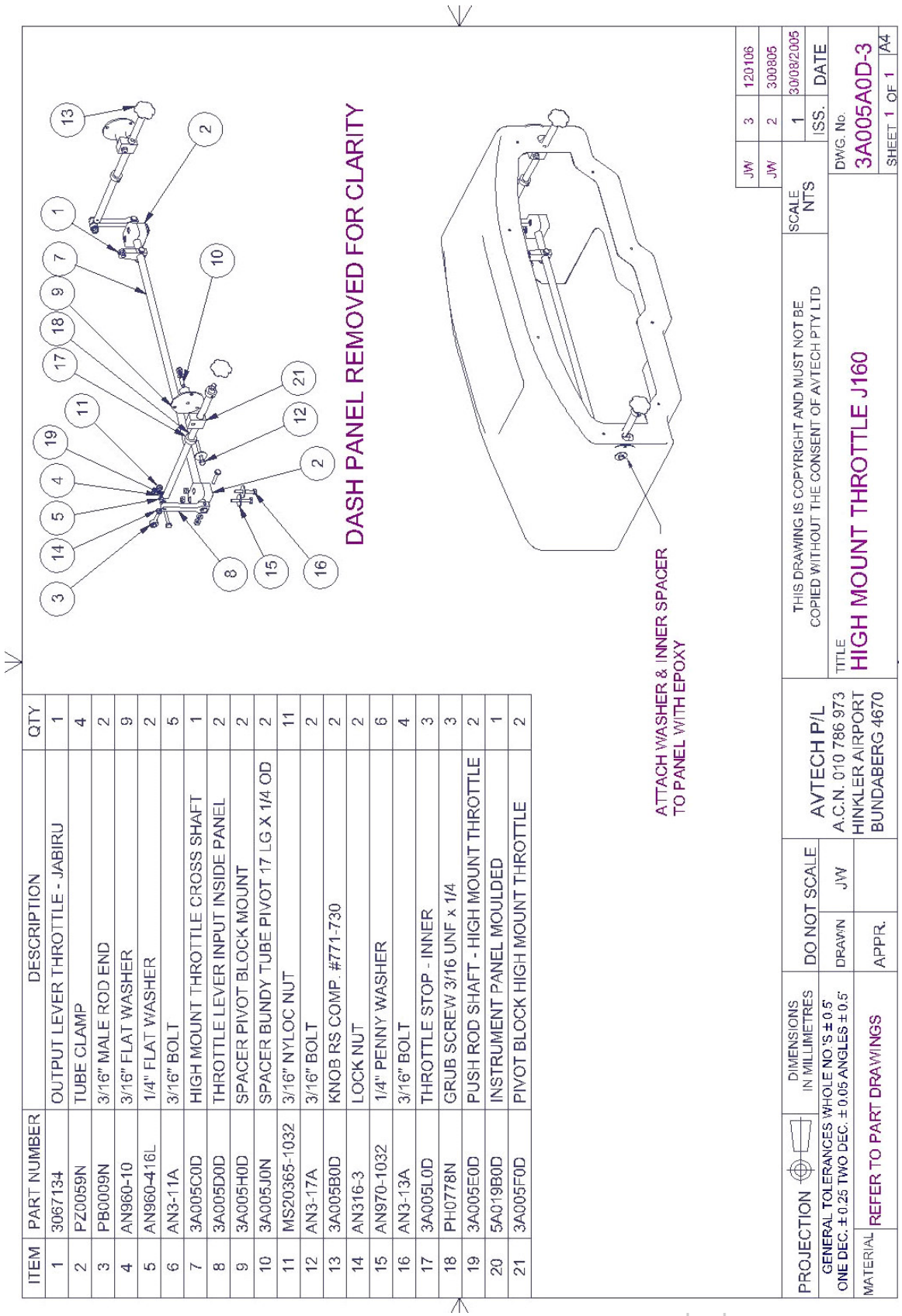
11.7 ENGINE CONTROLS

11.7.1 RIGGING

When adjusting any engine control, it is important to check that the control slides smoothly throughout its full range of travel & that the lever or knob moves through its full range of travel.

11.7.2 THROTTLE SYSTEM

The throttle system used is shown in Figure 41. Note that the same system is used irrespective of the instrument panel option fitted. Figure 42 shows the system fitted inside the Glass instrument panel.


DASH PANEL REMOVED FOR CLARITY
ATTACH WASHER & INNER SPACER TO PANEL WITH EPOXY
HIGH MOUNT THROTTLE J160
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
DWG. No. 3A005A0D-3
SHEET 1 OF 1 A4
SCALE NTS
DO NOT SCALE
DRAWN JW
APPR.
PROJECTION
DIMENSIONS IN MILLIMETRES
GENERAL TOLERANCES WHOLE NO 'S ± 0.5' ONE DEC. ± 0.25 TWO DEC. ± 0.05 ANGLES ± 0.5'
MATERIAL REFER TO PART DRAWINGS
JW 3 120106
JW 2 300805
1 30/08/2005
ISS. DATE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	3067134	OUTPUT LEVER THROTTLE - JABIRU	1
2	PZ0059N	TUBE CLAMP	4
3	PB0009N	3/16" MALE ROD END	2
4	AN960-10	3/16" FLAT WASHER	9
5	AN960-416L	1/4" FLAT WASHER	2
6	AN3-11A	3/16" BOLT	5
7	3A005C0D	HIGH MOUNT THROTTLE CROSS SHAFT	1
8	3A005D0D	THROTTLE LEVER INPUT INSIDE PANEL	2
9	3A005H0D	SPACER PIVOT BLOCK MOUNT	2
10	3A005J0N	SPACER BUNDY TUBE PIVOT 17 LG X 1/4 OD	2
11	MS20365-1032	3/16" NYLOC NUT	11
12	AN3-17A	3/16" BOLT	2
13	3A005B0D	KNOB RS COMP. #771-730	2
14	AN316-3	LOCK NUT	2
15	AN970-1032	1/4" PENNY WASHER	6
16	AN3-13A	3/16" BOLT	4
17	3A005L0D	THROTTLE STOP - INNER	3
18	PH0778N	GRUB SCREW 3/16 UNF x 1/4	3
19	3A005E0D	PUSH ROD SHAFT - HIGH MOUNT THROTTLE	2
20	5A019B0D	INSTRUMENT PANEL MOULDED	1
21	3A005F0D	PIVOT BLOCK HIGH MOUNT THROTTLE	2

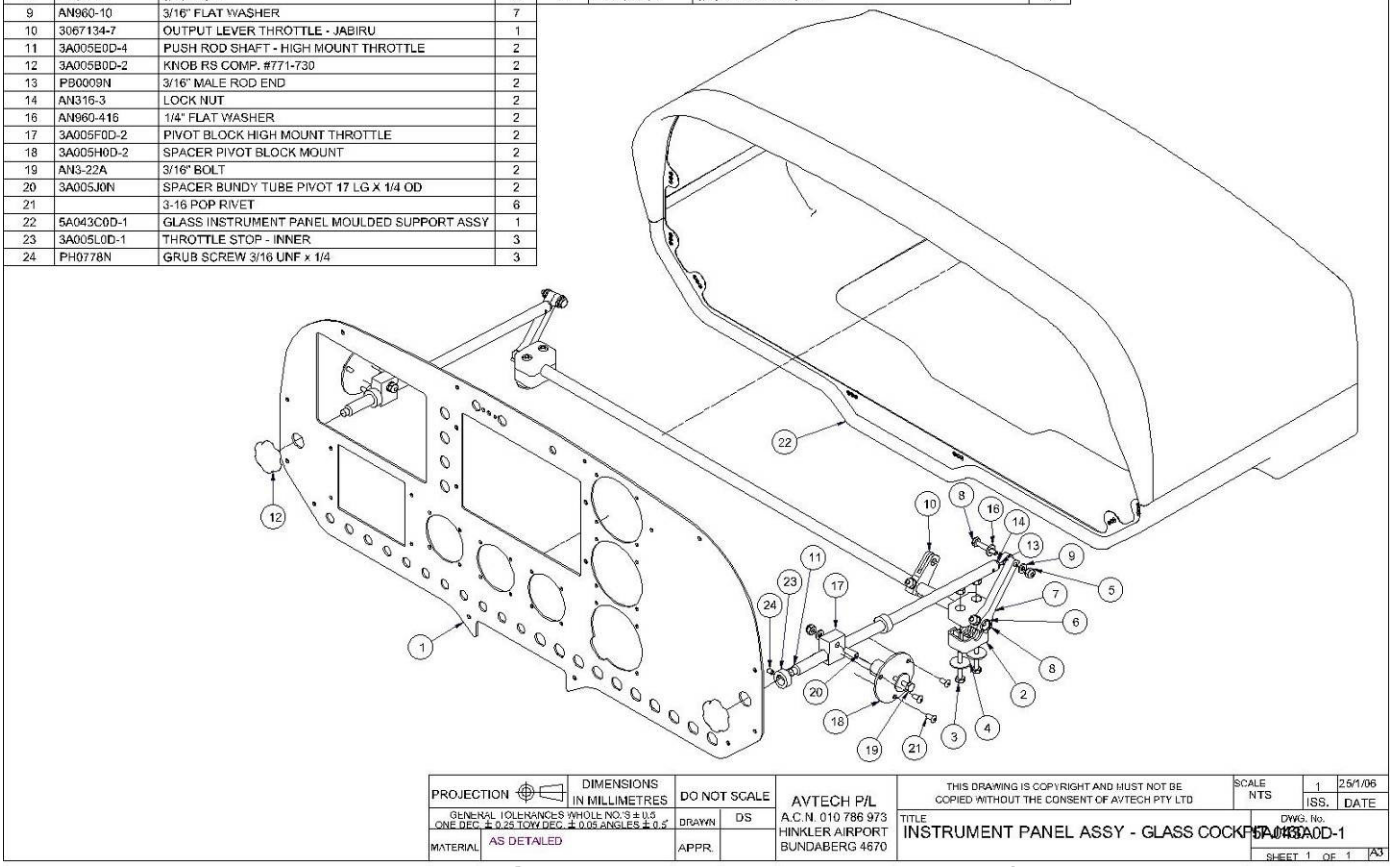
Figure 41. LSA Variant Throttle (Panel Mounted)

Parts List

ITEM	PART NUMBER	DESCRIPTION	QTY
5	MS20365-1032	3/16" NYLOC NUT	11
6	3A005C1D-1	THROTTLE CROSS SHAFT (PANEL 5A043)	1
7	3A005D0D-2	THROTTLE LEVER INPUT INSIDE PANEL	2
8	AN3-11A	3/16" BOLT	5
9	AN960-10	3/16" FLAT WASHER	7
10	3067134-7	OUTPUT LEVER THROTTLE - JABIRU	1
11	3A005E0D-4	PUSH ROD SHAFT - HIGH MOUNT THROTTLE	2
12	3A005B0D-2	KNOB RS COMP. #771-730	2
13	PB0009N	3/16" MALE ROD END	2
14	AN316-3	LOCK NUT	2
16	AN960-416	1/4" FLAT WASHER	2
17	3A005F0D-2	PIVOT BLOCK HIGH MOUNT THROTTLE	2
18	3A005H0D-2	SPACER PIVOT BLOCK MOUNT	2
19	AN3-22A	3/16" BOLT	2
20	3A005J0N	SPACER BUNDY TUBE PIVOT 17 LG X 1/4 OD	2
21		3-16 POP RIVET	6
22	5A043C0D-1	GLASS INSTRUMENT PANEL MOULDED SUPPORT ASSY	1
23	3A005L0D-1	THROTTLE STOP - INNER	3
24	PH0778N	GRUB SCREW 3/16 UNF x 1/4	3

Parts List

ITEM	PART NUMBER	DESCRIPTION	QTY
1	5A043B0D-1	INSTRUMENT PANEL FASCIA - GLASS COCKPIT J160	1
2	PZ0059N-1	TUBE CLAMP	4
3	AN3-13A	3/16" BOLT	4
4	AN970-1032	3/16" PENNY WASHER	6



PROJECTION | DIMENSIONS IN MILLIMETRES | DO NOT SCALE | AVTECH P/L A.C.N. 010 786 973 HINKLER AIRPORT BUNDABERG 4670
GENERAL TOLERANCES WHOLE NO.'S ± 0.5 ONE DEC. ± 0.25 TOW DEC. ± 0.05 ANGLES ± 0.5° | DRAWN DS
MATERIAL AS DETAILED | APPR.
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
SCALE NTS | 1 25/1/06 ISS. DATE
TITLE INSTRUMENT PANEL ASSY - GLASS COCKPIT | DWG. No. 5A043A0D-1
SHEET 1 OF 1 A3

Figure 42 – Instrument Panel & Throttle Assembly

11.7.3 CHOKE

The Choke Control is located in the main instrument panel & is connected to the carburettor by a control cable.

11.7.4 AIR INTAKE SYSTEM & CARBURETOR HEAT

The engine air intake system comprises a cold air inlet in the lower cowl, a hot air muff attached to the exhaust system, a mixer assembly mounted on the firewall and connected to a carburettor. The mixer box incorporates the air filter, control flaps etc.

Carburettor Heat is activated by pulling the Carburettor Heat Control on the panel OUT. This opens the hot air valve in the mixer assembly and permits hot air to flow from the muff into the carburettor.

The air filter should be inspected every 100 hours or more regularly if the engine is operated in dusty conditions. Refer Paragraph 11.9. Dirty filters can be cleaned once by blowing out with compressed air – when the filter becomes dirty again it must be replaced.

Refer to Figure 43.

ITEM	PART No.	DESCRIPTION	QTY.
1	4790800N	AIR INLET HOUSING	1
2	NAS697A08	2 LUG ANCHOR NUT	4
3	PH0399N	RIVET	8
4	426584N	RUBBER FLAP	1
5	426554N	BACKING STRIP	1
6	PH0399N	RIVET	3
7	4790904	FLAP ASSY	1
8	4028594	SPACER BLOCK CABLE	1
9	PH0359N	METAL THREAD M4 X 25	3
10		SPRING	1
11	4791000N	AIR INLET TUBE 57 DIA	1
12	PH0209N	NUT NYLOCK M4	4
13		NUT M4	2
14		METAL THREAD M4 X 20	1
15	4028894	LEVER	1
16		ROLL PIN ø2.5 X 15	1
17	4028994	EXTERNAL PIVOT BLOCK	1
18		SCREW C/SUNK M4 X 12	2
19	479110N	HOT AIR INLET TUBE 57 DIA	1
20	4028894	PIVOT BLOCK	1
21	PH0199N	SCREW SELF TAPPER	2

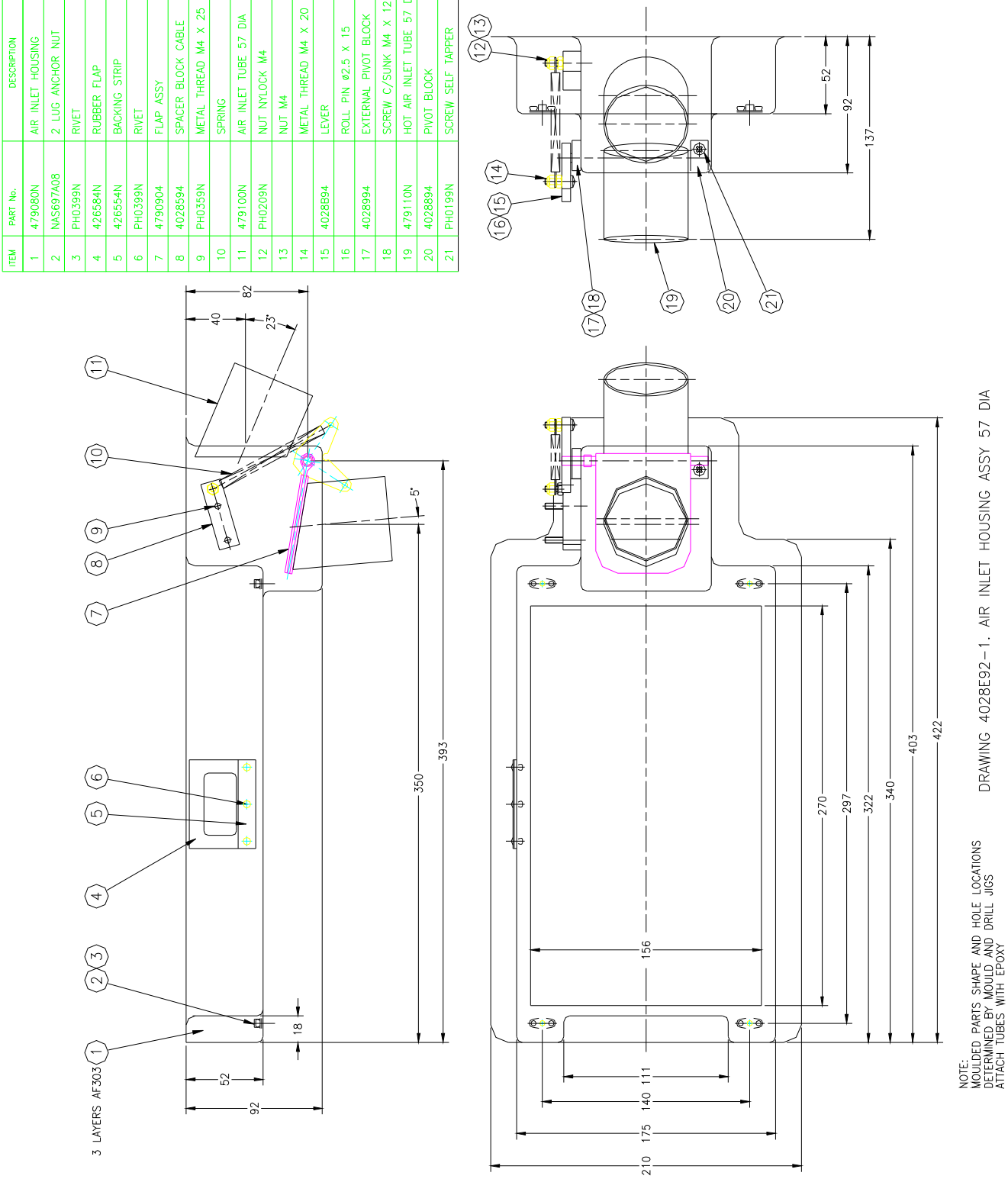


Figure 43. Carburetor Heat Box

11.8 EXHAUST SYSTEM

The exhaust system consists of front and rear exhaust manifolds attached to the engine block and a muffler assembly and springs which attach the muffler to the manifolds. Refer to Figure 44

11.8.1 EXHAUST SYSTEM REMOVAL AND INSTALLATION

1. Remove both top and bottom engine cowls.

2. Remove springs.

WARNING

Never remove coupling spring with a sharp object or one which can mark the spring material. A rounded screwdriver shank or a hook fashioned from ¼" bar stock is ideal.

3. Remove muffler assembly.

4. If necessary, remove exhaust manifolds from engine.

5. Reverse the preceding steps for installation.

11.8.2 EXHAUST INSPECTION

As all exhaust systems are subject to burning, cracking and general deterioration from alternate thermal stress and vibration, inspection is very important and should be carried out every 100 hours of operation.

In addition, an inspection of the exhaust system must be undertaken anytime exhaust fumes are noticed in the cabin.

1. Remove engine cowlings.

2. Inspect complete system, starting at the connection to the head; securing bolts and moving outwards. Especially check areas adjacent to welds. Look for exhaust gas deposits in surrounding areas, indicating that exhaust gas is escaping through a hole or crack.

For a more thorough inspection, the following procedure is recommended.

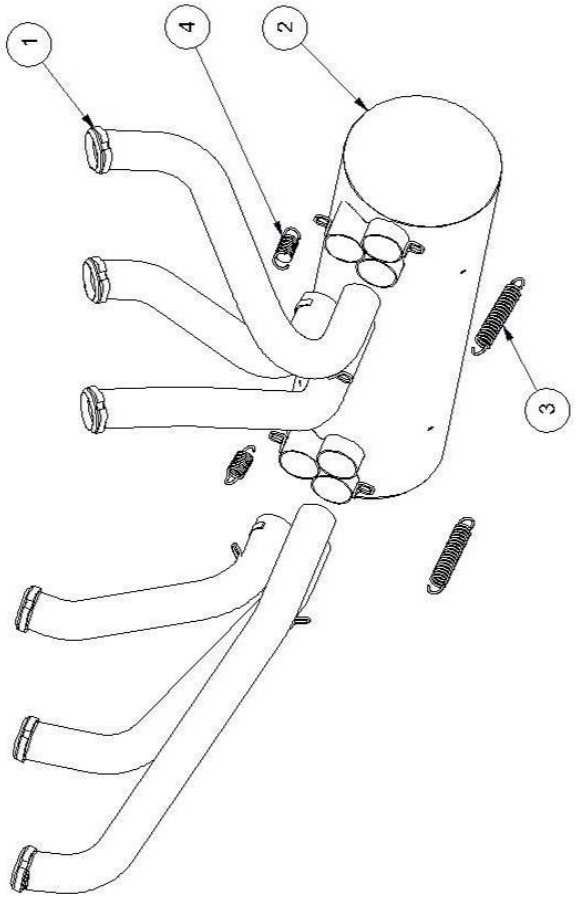
1. Remove manifolds and/or muffler.

2. Use rubber expansion plugs to seal openings.

3. Using a manometer or gauge, apply approximately 1-1/2 psi (3 inches of mercury) air pressure while the manifold and/or muffler are submerged in water. All leaks will appear as bubbles and can be readily detected.

4. It is recommended that any exhaust system component found to be defective is replaced with a new part before the next flight.

EXHAUST ASSY 3300 TRACTOR 4A293A0D-1



ITEM	PART No.	DESCRIPTION	QTY
1	4A199A0D	EXTRACTOR EXHAUST PIPE SET	1
2	4A175A0D	MUFFLER W/ASSY 3.3L W/O OUTLET	1
3	PE01094	SPRING EXHAUST RETAINER	2
4	PE4A003A0D	SPRING EXHAUST RETAINER 8 CYL	2

Figure 44. Exhaust System

11.9 EXTREME CLIMATIC CONDITIONS

11.9.1 DUST

Dust induced into the carburettor air intake system is probably the greatest single cause of early engine wear. When operating under high dust conditions, the carburettor air filters should be serviced regularly as outlined in Paragraph 11.7.4. Servicing intervals for aircraft operating in extreme conditions are at the operator's discretion.

11.9.2 SEACOAST AND HUMID AREA

In salt water areas, special care should be taken to keep the engine and accessories clean to prevent oxidisation.

In humid areas, fuel should be checked frequently and drained of condensed moisture.

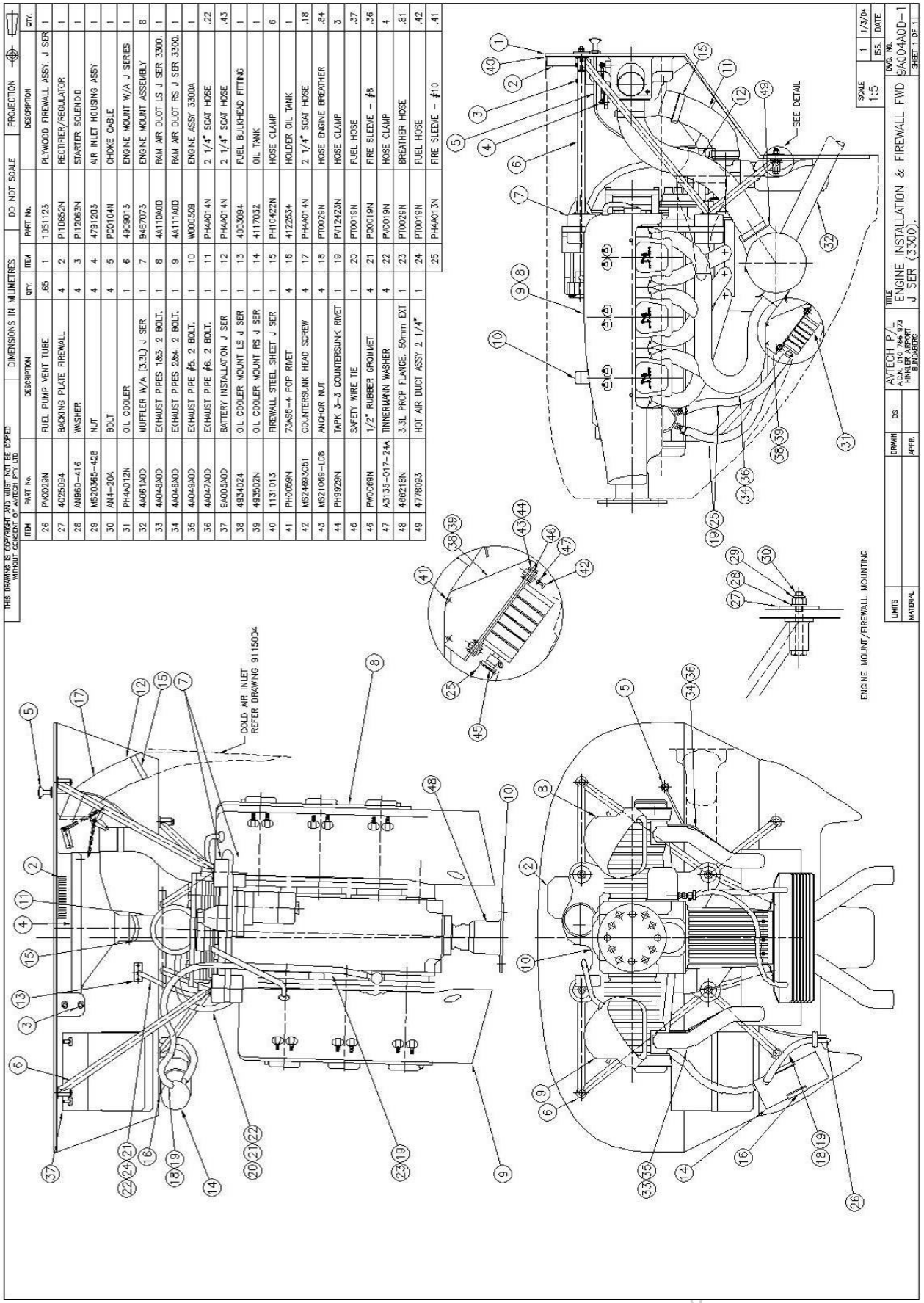

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY. LTD.
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
PROJECTION
ITEM | PART No. | DESCRIPTION | QTY.
26 | PV0028N | FUEL PUMP VENT TUBE | .85
27 | 4025094 | BACKING PLATE FIREWALL | 4
28 | AN960-416 | WASHER | 4
29 | MS20365-428 | NUT | 4
30 | AN4-20A | BOLT | 4
31 | PH4012N | OIL COOLER | 1
32 | 44061A0D | MUFFLER W/A (3.3L) J SER | 1
33 | 44048A0D | EXHAUST PIPES 1ø3. 2 BOLT. | 1
34 | 44046A0D | EXHAUST PIPES 2ø4. 2 BOLT. | 1
35 | 44049A0D | EXHAUST PIPE ø5. 2 BOLT. | 1
36 | 44047A0D | EXHAUST PIPE ø6. 2 BOLT. | 1
37 | 94005A0D | BATTERY INSTALLATION J SER | 1
38 | 4834024 | OIL COOLER MOUNT LS J SER | 1
39 | 483502N | OIL COOLER MOUNT RS J SER | 1
40 | 1131013 | FIREWALL STEEL SHEET J SER | 1
41 | PH0059N | 73AS6-4 POP RIVET | 4
42 | MS24693C51 | COUNTERSUNK HEAD SCREW | 4
43 | MS21069-L08 | ANCHOR NUT | 4
44 | PH9929N | TAPK 3-3 COUNTERSUNK RIVET | 1
45 | | SAFETY WIRE TIE | 1
46 | PW0069N | 1/2" RUBBER GROMMET | 4
47 | A3135-017-24A | TINNERMANN WASHER | 4
48 | 466218N | 3.3L PROP FLANGE. 50mm EXT | 1
49 | 47780093 | HOT AIR DUCT ASSY 2 1/4" | 1
ITEM | PART No. | DESCRIPTION | QTY.
1 | 1051123 | PLYWOOD FIREWALL ASSY. J SER | 1
2 | PI106552N | RECTIFIER/REGULATOR | 1
3 | PI120639N | STARTER SOLENOID | 1
4 | 4791203 | AIR INLET HOUSING ASSY | 1
5 | PC0104N | CHOKE CABLE | 1
6 | 4909013 | ENGINE MOUNT W/A J SERIES | 1
7 | 9467073 | ENGINE MOUNT ASSEMBLY | 8
8 | 44110A0D | RAM AIR DUCT LS J SER 3300. | 1
9 | 44111A0D | RAM AIR DUCT RS J SER 3300. | 1
10 | W000509 | ENGINE ASSY 3300A | 1
11 | PH4401N | 2 1/4" SCAT HOSE | .22
12 | PH4401N | 2 1/4" SCAT HOSE | .43
13 | 4003094 | FUEL BULKHEAD FITTING | 1
14 | 4117032 | OIL TANK | 1
15 | PH1042ZN | HOSE CLAMP | 6
16 | 4122534 | HOLDER OIL TANK | 1
17 | PH4A01N | 2 1/4" SCAT HOSE | .18
18 | PT0029N | HOSE ENGINE BREATHER | .84
19 | PV12423N | HOSE CLAMP | 3
20 | PT0019N | FUEL HOSE | .37
21 | P0001SN | FIRE SLEEVE - ø8 | .36
22 | PV0019N | HOSE CLAMP | 4
23 | PT0029N | BREATHER HOSE | .81
24 | PT0019N | FUEL HOSE | .42
25 | PH4A013N | FIRE SLEEVE - ø10 | .41
COLD AIR INLET
REFER DRAWING 9115004
SEE DETAIL
ENGINE MOUNT/FIREWALL MOUNTING
DRAWN DS
APPR.
AVTECH P/L
A.C.N. 010 766 973
HIRTH ROAD AIRPORT
BUNDABERG
TITLE
ENGINE INSTALLATION & FIREWALL FWD
J SER (3300).
SCALE 1:5
ISS. 1 1/3/04
DWG. NO. 9A004A0D-1
SHEET 1 OF 11
LIMITS
MATERIAL

Figure 45. Engine Installation

12 SECTION 12 – FUEL SYSTEM

12.1 DESCRIPTION

Refer to Figures 46 and **!Undefined Bookmark, NONCSVLAF** for system schematic details.

Fuel is pump-fed from two composite fuel tanks inside the wings, through a header tank, fuel filter & shut-off valves and through a bulkhead in the firewall to the carburettor. The primary fuel pump is attached to the engine. A secondary, electronic pump is mounted in the cabin (refer details below). Positive ventilation is provided by vented fuel caps. The airspaces of all tanks are connected to ensure even feeding.

12.1.1 LSA AIRCRAFT FUEL SYSTEM

1. A schematic drawing of the system is shown as Figure 46.

2. The 5 Litre header tank is housed in an enclosure behind the rear cockpit bulkhead. This enclosure is sealed from the cabin & vented overboard.

3. The fuel filter and auxiliary electronic fuel pump are mounted inside the header tank enclosure.

4. The fuel cap vents incorporate a check valve to prevent excess fuel spilling out of the vent when the aircraft is parked on an angle or flown out of balance.

5. All fuel lines inside the cabin are housed within plastic sheath.

6. The main fuel valve is located on the Main Beam in the cabin.

12.1.2 PRECAUTIONS

There are certain general precautions and rules concerning the fuel system which must be observed when performing the operations and procedures in this Section.

1. During all fuelling, defuelling, tank purging and tank disassembly, ground the aircraft to avoid static electricity sparks.

2. Residual fuel draining from hose constitutes a fire hazard. Use caution to prevent the accumulation of fuel when hoses are disconnected.

3. Cap open hoses and cover connections to prevent the entrance of foreign matter.

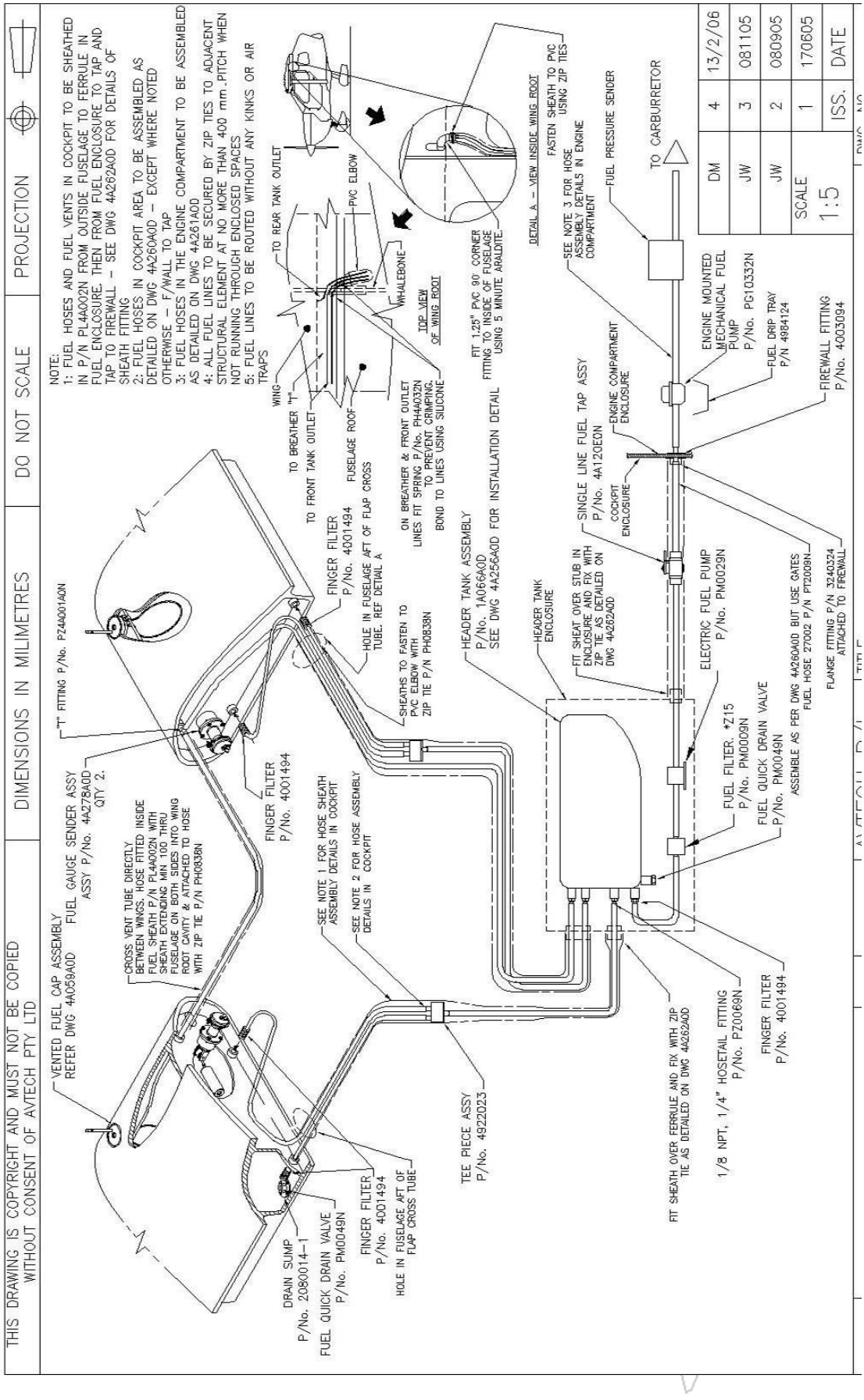

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
PROJECTION
NOTE:
1: FUEL HOSES AND FUEL VENTS IN COCKPIT TO BE SHEATHED IN P/N PL4A002N FROM OUTSIDE FUSELAGE TO FERRULE IN FUEL ENCLOSURE. THEN FROM FUEL ENCLOSURE TO TAP AND TAP TO FIREWALL – SEE DWG 4A262A0D FOR DETAILS OF SHEATH FITTING
2: FUEL HOSES IN COCKPIT AREA TO BE ASSEMBLED AS DETAILED ON DWG 4A260A0D – EXCEPT WHERE NOTED OTHERWISE – F/WALL TO TAP
3: FUEL HOSES IN THE ENGINE COMPARTMENT TO BE ASSEMBLED AS DETAILED ON DWG 4A261A0D
4: ALL FUEL LINES TO BE SECURED BY ZIP TIES TO ADJACENT STRUCTURAL ELEMENT AT NO MORE THAN 400 mm. PITCH WHEN NOT RUNNING THROUGH ENCLOSED SPACES
5: FUEL LINES TO BE ROUTED WITHOUT ANY KINKS OR AIR TRAPS
SCALE 1:5
ISS. DATE
DM 4 13/2/06
JW 3 081105
JW 2 080905
1 170605
TO REAR TANK OUTLET
PVC ELBOW
WHALEBONE
WING
TO BREATHER "T"
TO FRONT TANK OUTLET
FUSELAGE ROOF
TOP VIEW OF WING ROOT
FIT 1.25" PVC 90° CORNER FITTING TO INSIDE OF FUSELAGE USING 5 MINUTE ARALDITE
DETAIL A – VIEW INSIDE WING ROOT
FASTEN SHEATH TO PVC USING ZIP TIES
SEE NOTE 3 FOR HOSE ASSEMBLY DETAILS IN ENGINE COMPARTMENT
FUEL PRESSURE SENDER
TO CARBURRETOR
ENGINE MOUNTED MECHANICAL FUEL PUMP P/No. PG10332N
FUEL DRIP TRAY P/N 4984124
FIREWALL FITTING P/No. 4003094
ENGINE COMPARTMENT ENCLOSURE
COCKPIT ENCLOSURE
SINGLE LINE FUEL TAP ASSY P/No. 4A120E0N
FIT SHEAT OVER STUB IN ENCLOSURE AND FIX WITH ZIP TIE AS DETAILED ON DWG 4A262A0D
HEADER TANK ENCLOSURE
HEADER TANK ASSEMBLY P/No. 1A066A0D SEE DWG 4A256A0D FOR INSTALLATION DETAIL
ON BREATHER & FRONT OUTLET LINES FIT SPRING P/No. PH4A032N TO PREVENT CRIMPING. BOND TO LINES USING SILICONE
FINGER FILTER P/No. 4001494
HOLE IN FUSELAGE AFT OF FLAP CROSS TUBE. REF DETAIL A
SHEATHS TO FASTEN TO PVC ELBOW WITH ZIP TIE P/N PH0838N
ELECTRIC FUEL PUMP P/No. PM0029N
FUEL FILTER. *Z15 P/No. PM0009N
FUEL QUICK DRAIN VALVE P/No. PM0049N
ASSEMBLE AS PER DWG 4A260A0D BUT USE GATES FUEL HOSE 27002 P/N PT2009N
FLANGE FITTING P/N 3240324 ATTACHED TO FIREWALL
"T" FITTING P/No. PZ4A001A0N
VENTED FUEL CAP ASSEMBLY REFER DWG 4A059A0D
FUEL GAUGE SENDER ASSY ASSY P/No. 4A278A0D QTY 2.
CROSS VENT TUBE DIRECTLY BETWEEN WINGS. HOSE FITTED INSIDE FUEL SHEATH P/N PL4A002N WITH SHEATH EXTENDING MIN 100 THRU FUSELAGE ON BOTH SIDES INTO WING ROOT CAVITY & ATTACHED TO HOSE WITH ZIP TIE P/N PH0838N
FINGER FILTER P/No. 4001494
SEE NOTE 1 FOR HOSE SHEATH ASSEMBLY DETAILS IN COCKPIT
SEE NOTE 2 FOR HOSE ASSEMBLY DETAILS IN COCKPIT
TEE PIECE ASSY P/No. 4922023
FIT SHEATH OVER FERRULE AND FIX WITH ZIP TIE AS DETAILED ON DWG 4A262A0D
1/8 NPT, 1/4" HOSETAIL FITTING P/No. PZ0069N
FINGER FILTER P/No. 4001494
DRAIN SUMP P/No. 2080014-1
FUEL QUICK DRAIN VALVE P/No. PM0049N
FINGER FILTER P/No. 4001494
HOLE IN FUSELAGE AFT OF FLAP CROSS TUBE

Figure 46. Fuel System Schematic – LSA Variants

12.1.3 FUEL SYSTEM TROUBLE SHOOTING

Table 8. Trouble Shooting – Fuel System

Trouble	Probable Cause	Remedy
No fuel to carburettor	Fuel shut-off valve not turned ON	Turn valve ON
	Fuel tank empty	Service with proper grade and amount of fuel
	Fuel line disconnected or broken	Connect or repair fuel lines
	Fuel tank outlet strainer plugged	Remove and clean strainer and flush out fuel tank
	Defective fuel shut-off valve	Replace shut-off valve
	Plugged fuel filter	Replace filter
	Fuel line plugged	Clean out or replace fuel line
Fuel Starvation after starting	Partial fuel flow from preceding causes	Use the preceding remedies
	Plugged fuel vent	See Paragraph 11.3
	Water in fuel	Drain fuel tank sump, fuel lines and filter

12.2 FUEL TANK

12.2.1 DESCRIPTION

The composite fuel tanks are located in the left & right hand wings. A sump drain plug is provided in each wing root on the under side wing skin. A third sump drain plug is provided in the header tank (located behind the rear bulkhead). These three points must be checked as part of the daily inspection and after each refueling to drain and trapped water or sediment.

12.2.2 FUEL TANK REMOVAL & INSTALLATION

As the wing fuel tanks are part of the wing integrity, these fuel tanks can not be removed.

The header tank may be removed if necessary to check outlet strainers etc.

12.2.2.1 HEADER TANK REMOVAL

1. Drain fuel from wing tanks.

2. Remove the drain plug and drain the fuel from the header tank.

3. Remove the header tank access panel from the rear bulkhead.

4. Remove tank restraints.

5. Loosen hose clamps, remove hoses & remove tank.

6. Installation is the reverse of removal.

12.3 FUEL VENTS

12.3.1 DESCRIPTION

Refer to Figure 47. Positive ventilation is provided by vented fuel caps. The caps incorporate a check valve to prevent excess fuel leakage when the aircraft is parked on an angle or flown out of balance. All three tanks are interconnected to ensure uniform breather pressure and even feeding from all tanks.

12.3.2 CHECKING

Vent lines can become blocked, resulting in fuel starvation of the engine. Also, the vent line, if plugged, can result in pressure from expanding fuel pressurising the tank. The following procedure may be used to check the tank and tube.

1. Have an assistant hold a rubber glove or balloon over the vent tube on one cap.

2. Blow into the cap vent on the other wing. If the balloon/glove inflates the breather lines between the tanks are open and the tanks are cross-feeding.

3. Correct any blockage.

To check the breather line for the header tank:

1. Turn off taps or clamp lines between the wing tanks and the header tank.

2. Disconnect the fuel line from the mechanical fuel pump on the engine.

3. Allow fuel to flow from the line for approximately a minute WITHOUT turning the electric boost pump on. If the fuel flows freely the breather connection between the header tank and the main tanks is clear.

4. Correct any blockage & reassemble.

WARNING

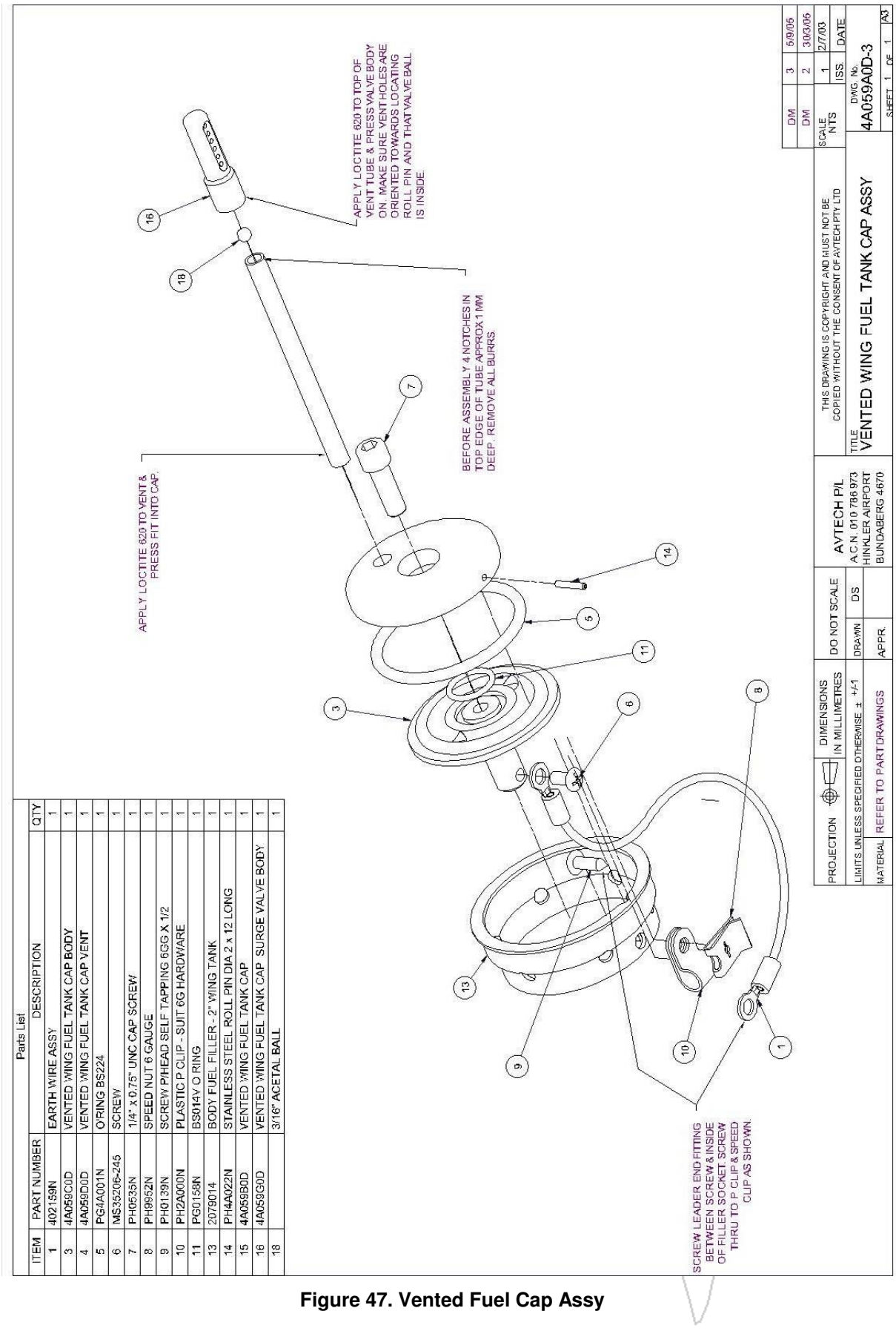
Fuel valves between wing tanks and header tanks must be in the "ON" position during flight.

To check the operation of the fuel vent check valve:

1. Remove the cap and shake it. The ball inside should move freely, producing a rattling sound.

2. An alternative method which may be used is to fill the wing tanks with fuel, then shake the aircraft by pushing up and down on the wingtip. While small droplet leakage is normal, fuel must not squirt out of the vent.

3. If a fault is detected, disassemble the vent and replace any defective parts.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 402159N | EARTH WIRE ASSY | 1
3 | 4A059C0D | VENTED WING FUEL TANK CAP BODY | 1
4 | 4A059D0D | VENTED WING FUEL TANK CAP VENT | 1
5 | PG4A001N | O'RING BS224 | 1
6 | MS35206-245 | SCREW | 1
7 | PH0535N | 1/4" x 0.75" UNC CAP SCREW | 1
8 | PH9952N | SPEED NUT 6 GAUGE | 1
9 | PH0139N | SCREW P/HEAD SELF TAPPING 6GG X 1/2 | 1
10 | PH2A000N | PLASTIC P CLIP - SUIT 6G HARDWARE | 1
11 | PG0158N | BS014V O RING | 1
13 | 2079014 | BODY FUEL FILLER - 2" WING TANK | 1
14 | PH4A022N | STAINLESS STEEL ROLL PIN DIA 2 x 12 LONG | 1
15 | 4A059B0D | VENTED WING FUEL TANK CAP | 1
16 | 4A059G0D | VENTED WING FUEL TANK CAP SURGE VALVE BODY | 1
18 | | 3/16" ACETAL BALL | 1
APPLY LOCTITE 620 TO VENT & PRESS FIT INTO CAP.
APPLY LOCTITE 620 TO TOP OF VENT TUBE & PRESS VALVE BODY ON. MAKE SURE VENT HOLES ARE ORIENTED TOWARDS LOCATING ROLL PIN AND THAT VALVE BALL IS INSIDE.
BEFORE ASSEMBLY 4 NOTCHES IN TOP EDGE OF TUBE APPROX 1 MM DEEP. REMOVE ALL BURRS.
SCREW LEADER END FITTING BETWEEN SCREW & INSIDE OF FILLER SOCKET SCREW THRU TO P CLIP & SPEED CLIP AS SHOWN.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
LIMITS UNLESS SPECIFIED OTHERWISE ± +/-1
DRAWN DS
MATERIAL REFER TO PART DRAWINGS
APPR.
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TITLE
VENTED WING FUEL TANK CAP ASSY
SCALE NTS
DWG. No. 4A059A0D-3
SHEET 1 OF 1 A3
DM 3 5/9/05
DM 2 30/3/05
1 27/7/03
ISS DATE

Figure 47. Vented Fuel Cap Assy

12.4 FUEL SHUT-OFF VALVE

See Figure 46 or **!Undefined Bookmark, NONCSVLAF** & 48, depending on model variant.

12.4.1 DESCRIPTION

The fuel shut-off valve is a two-position ON – OFF valve which is located in front of the main longitudinal beam.

12.4.2 FUEL VALVE REMOVAL & INSTALLATION

1. Turn OFF both taps between wing tanks and header tank. Cover both tank cap vents. On LSA models the fuel system must be drained as there is no taps between wings and header tank.

2. Remove fuel shut-off valve cover.

3. Remove shut-off valve handle.

4. Remove cover plate.

5. Disconnect and cap fuel lines at shut-off valve.

6. Remove shut-off valve.

7. Reverse the preceding steps for installation.

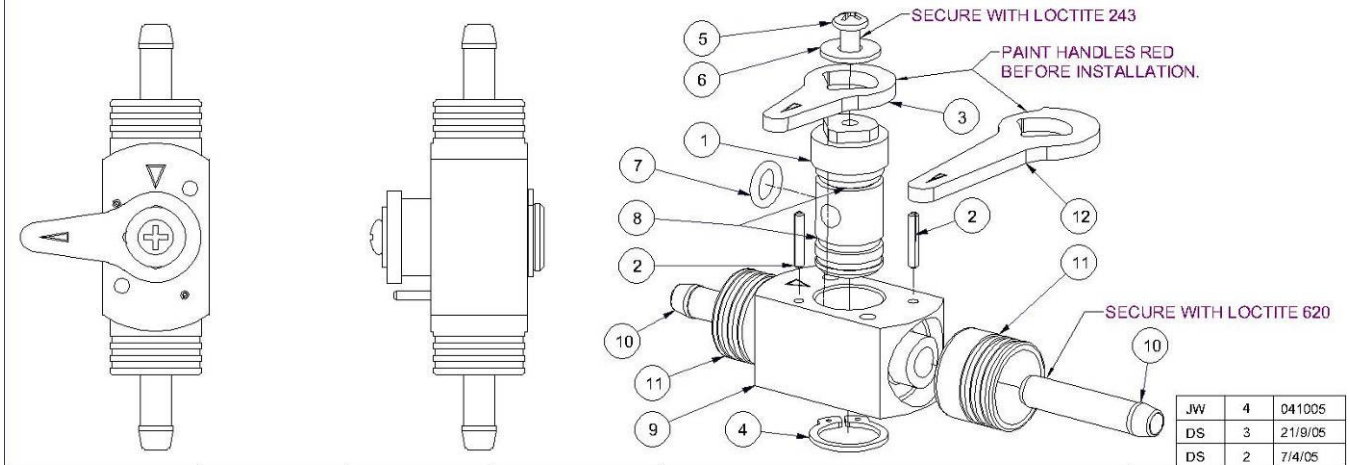
WARNING

Fuel valves between wing tanks and header tanks must be in the "ON" position during flight.

Ensure wing tank cap vent covers are removed.

ITEM	PART NUMBER	DESCRIPTION	QTY	4A120A0D	4A120E0N	4A120F0N
1	4905214	SPOOL FUEL TAP - J SERIES	1	YES	YES	YES
2	PH4A020N	ROLL PIN DIA 2 x 12 LONG	2	YES	YES	YES
3	4905314	FUEL TAP LEVER - J SERIES	1	YES	NO	YES
4	PH4A019N	CIRCLIP. EXT DIA 14	1	YES	YES	YES
5	MS35206-245	SCREW	1	YES	YES	YES
6	PH4A021N	PLAIN (GAL) WASHER - ID 5, OD 12.5	1	YES	YES	YES
7	PG4A023N	BS010V O RING	1	YES	YES	YES
8	PG4A024N	BS013V O RING	2	YES	YES	YES
9	4A120B0D	SINGLE LINE FUEL TAP BODY	1	YES	YES	YES
10	4920223	HOSETAIL SIGHT GLASS	2	YES	YES	YES
11	4A120C0D	FUEL SHEATH SPIGOT.	2	NO	YES	YES
12	4A120D0D	SINGLE LINE FUEL TAP LARGE LEVER	1	NO	YES	NO

NOTES:
1. ORIENTATION OF LEVER IN ASSY, WHEN CORRECTLY ASSEMBLED, ARROW ON LEVER POINTS IN SAME DIRECTION AS ARROW ON TAP BODY. TAP WILL ONLY THRUN THRU 90 DEG WHEN ASSEMBLED PROPERLY - IF TAP TURNS FURTHER IT MUST BE RE-ASSEMBLED PROPERLY.



JW	4	041005	
DS	3	21/9/05	
DS	2	7/4/05	
	1	17/03/04	
	ISS.	DATE	

PROJECTION | DIMENSIONS IN MILLIMETRES | DO NOT SCALE | AVTECH P/L A.C.N. 010 786 973 HINKLER AIRPORT BUNDABERG 4670 | THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD | SCALE 1:1

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MATERIAL AS DETAILED IN PART DRAWINGS | APPR.

TITLE SINGLE LINE FUEL TAP ASSY

DWG. No. 4A120A0D-4

SHEET 1 OF 1 A4

Figure 48. Single Line Fuel Tap

12.5 FUEL GAUGES

Two different fuel gauge systems are used in the J230 family. The first uses sight gauges located in the wing roots while the second uses senders in the tanks to drive electronic (LCD) gauges fitted in the instrument panel.

NOTE

Both gauges are intended to require no servicing – the information below is provided for reference.

12.5.1 DESCRIPTION – SIGHT GLASSES

The gauge consists of an aluminium body with a clear window which allows fuel level to be read directly. Decals fixed to the window show fuel level. Refer to Figure 51 for details of the gauge assembly.

12.5.2 FUEL SIGHT GAUGE REMOVAL & INSTALLATION

1. Remove the wing as detailed in Section 5.1.1 above.

2. Remove the gauge from the aircraft.

3. Reverse the preceding steps for installation.

12.5.3 ELECTRIC FUEL GAUGE TROUBLESHOOTING

Table 9. Trouble Shooting – Fuel Gauge

Trouble	Probable Cause	Remedy
Gauge on panel reads full, tanks low	Bad connection between sender & gauge	Fix connection
	Sender has lost calibration	Remove sender & re-calibrate

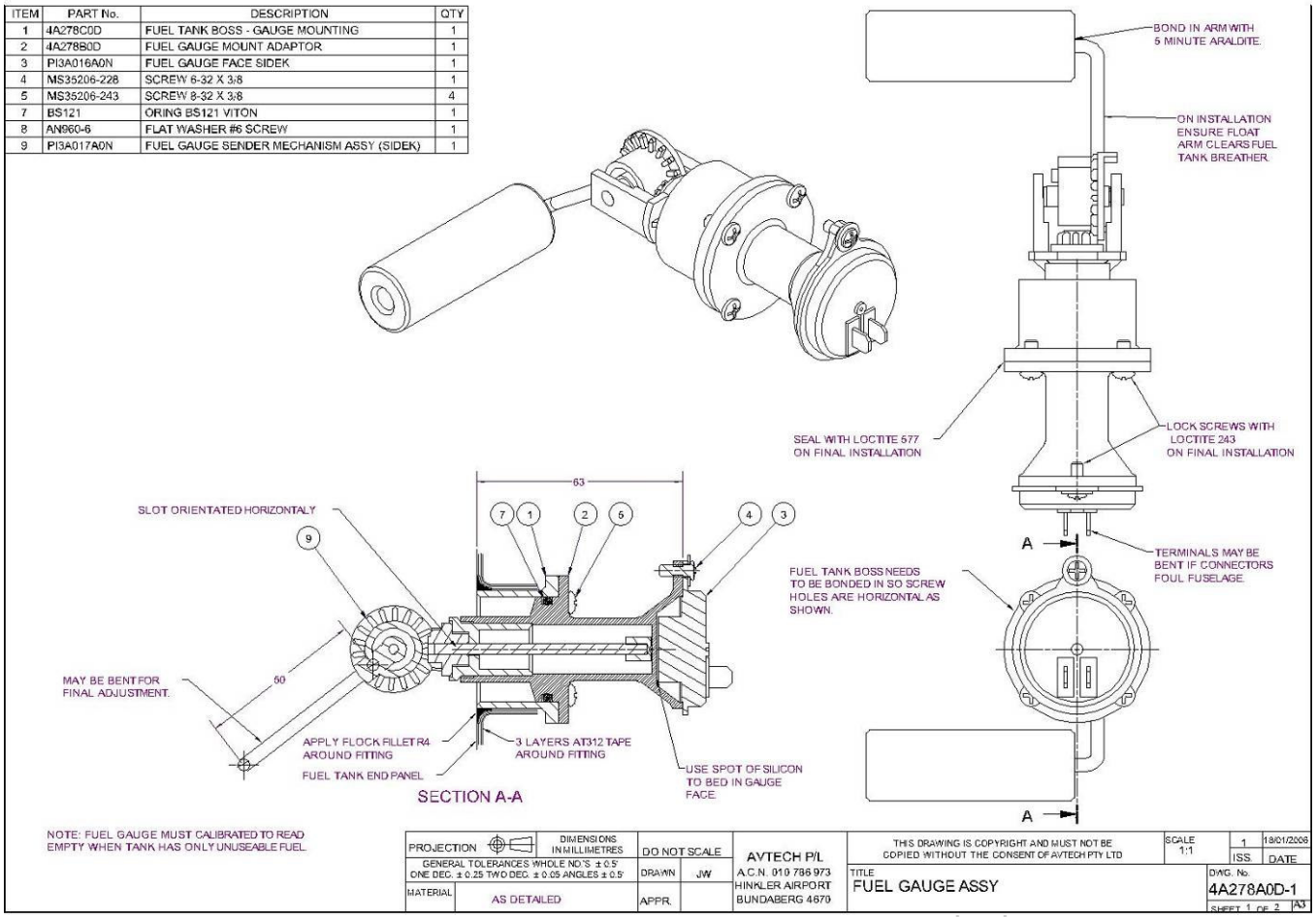
12.5.4 ELECTRIC FUEL GAUGE SENDER REMOVAL & INSTALLATION

1. Remove the wing as detailed in Section 5.1.1 above.

2. Remove the 4 screws holding the sender mount to the tank boss & remove the sender.

3. Reverse the preceding steps for installation.

4. Wiring details for the system are given in Figure 59 and Figure 60.


ITEM | PART No. | DESCRIPTION | QTY
1 | 4A278C0D | FUEL TANK BOSS - GAUGE MOUNTING | 1
2 | 4A278B0D | FUEL GAUGE MOUNT ADAPTOR | 1
3 | PI3A016A0N | FUEL GAUGE FACE SIDEK | 1
4 | MS35206-228 | SCREW 6-32 X 3/8 | 1
5 | MS35206-243 | SCREW 8-32 X 3/8 | 4
7 | BS121 | ORING BS121 VITON | 1
8 | AN960-6 | FLAT WASHER #6 SCREW | 1
9 | PI3A017A0N | FUEL GAUGE SENDER MECHANISM ASSY (SIDEK) | 1
BOND IN ARM WITH 5 MINUTE ARALDITE.
ON INSTALLATION ENSURE FLOAT ARM CLEARS FUEL TANK BREATHER.
SEAL WITH LOCTITE 577 ON FINAL INSTALLATION
LOCK SCREWS WITH LOCTITE 243 ON FINAL INSTALLATION
TERMINALS MAY BE BENT IF CONNECTORS FOUL FUSELAGE.
FUEL TANK BOSS NEEDS TO BE BONDED IN SO SCREW HOLES ARE HORIZONTAL AS SHOWN.
SLOT ORIENTATED HORIZONTALY
63
MAY BE BENT FOR FINAL ADJUSTMENT.
60
APPLY FLOCK FILLET R4 AROUND FITTING
FUEL TANK END PANEL
3 LAYERS AT312 TAPE AROUND FITTING
USE SPOT OF SILICON TO BED IN GAUGE FACE
SECTION A-A
NOTE: FUEL GAUGE MUST CALIBRATED TO READ EMPTY WHEN TANK HAS ONLY UNUSEABLE FUEL.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
GENERAL TOLERANCES WHOLE NO'S ± 0.5' ONE DEC. ± 0.25 TWO DEC. ± 0.05 ANGLES ± 0.5'
DRAWN JW
MATERIAL AS DETAILED
APPR.
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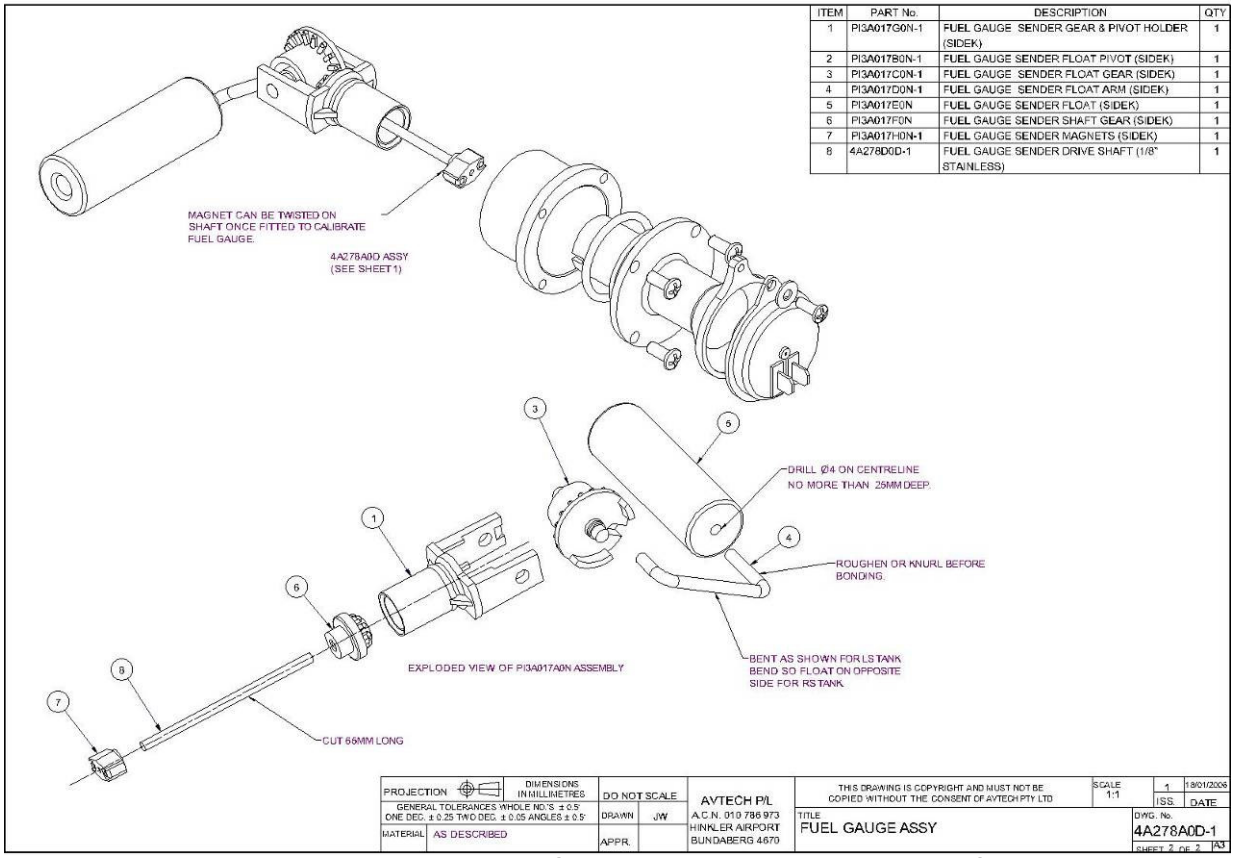
ISS. 1
DATE 18/01/2006
TITLE FUEL GAUGE ASSY
DWG. No. 4A278A0D-1
SHEET 1 OF 2 A3

Figure 49. Fuel Gauge – Electric Sender Installation


ITEM | PART No. | DESCRIPTION | QTY
1 | PI3A017G0N-1 | FUEL GAUGE SENDER GEAR & PIVOT HOLDER (SIDEK) | 1
2 | PI3A017B0N-1 | FUEL GAUGE SENDER FLOAT PIVOT (SIDEK) | 1
3 | PI3A017C0N-1 | FUEL GAUGE SENDER FLOAT GEAR (SIDEK) | 1
4 | PI3A017D0N-1 | FUEL GAUGE SENDER FLOAT ARM (SIDEK) | 1
5 | PI3A017E0N | FUEL GAUGE SENDER FLOAT (SIDEK) | 1
6 | PI3A017F0N | FUEL GAUGE SENDER SHAFT GEAR (SIDEK) | 1
7 | PI3A017H0N-1 | FUEL GAUGE SENDER MAGNETS (SIDEK) | 1
8 | 4A278D0D-1 | FUEL GAUGE SENDER DRIVE SHAFT (1/8" STAINLESS) | 1
MAGNET CAN BE TWISTED ON SHAFT ONCE FITTED TO CALIBRATE FUEL GAUGE.
4A278A0D ASSY (SEE SHEET 1)
DRILL Ø4 ON CENTRELINE NO MORE THAN 25MM DEEP.
ROUGHEN OR KNURL BEFORE BONDING.
BENT AS SHOWN FOR LS TANK BEND SO FLOAT ON OPPOSITE SIDE FOR RS TANK.
EXPLODED VIEW OF PI3A017A0N ASSEMBLY
CUT 66MM LONG
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
GENERAL TOLERANCES WHOLE NO'S. ± 0.5 ONE DEC. ± 0.25 TWO DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL AS DESCRIBED
DRAWN JW
APPR.
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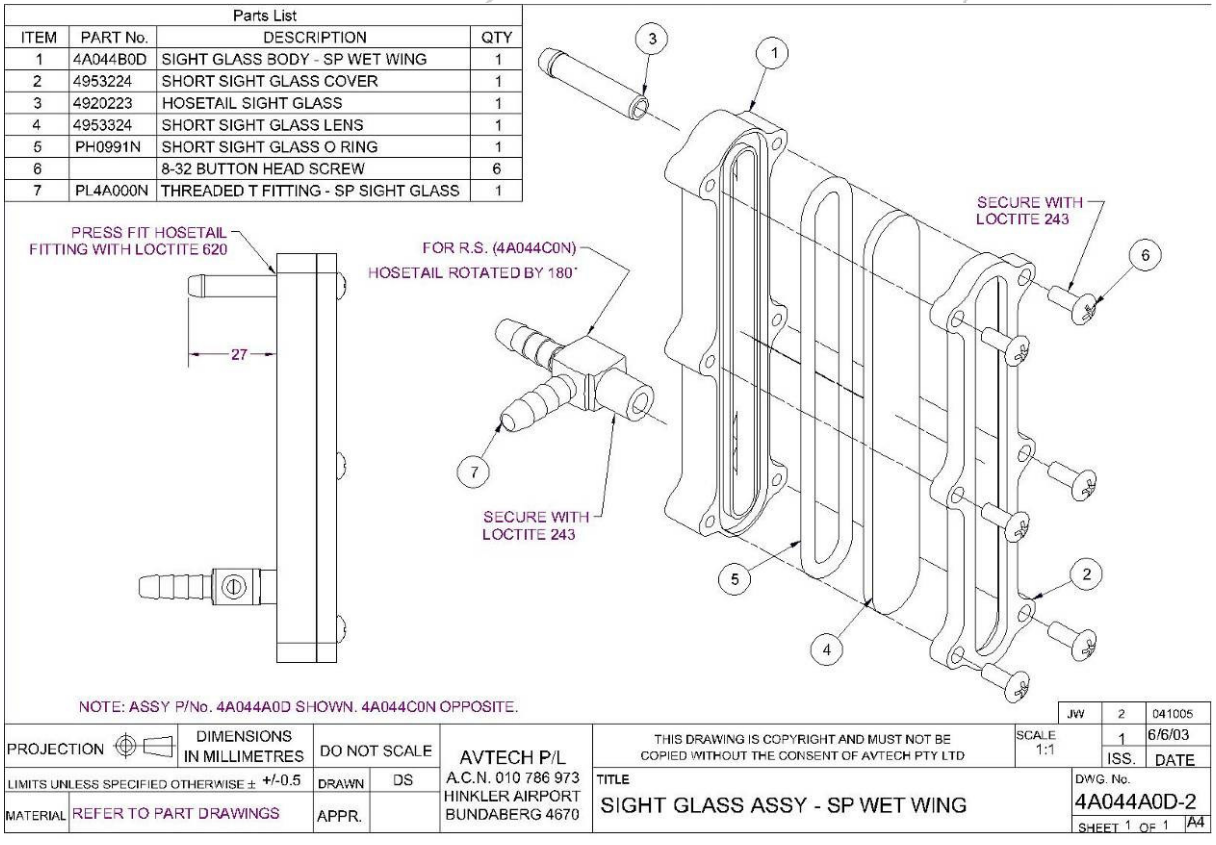
18/01/2006
DATE
TITLE
FUEL GAUGE ASSY
DWG. No.
4A278A0D-1
SHEET 2 OF 2
A3

Figure 50. Fuel Gauge – Electric Sender Assembly


Parts List
ITEM | PART No. | DESCRIPTION | QTY
1 | 4A044B0D | SIGHT GLASS BODY - SP WET WING | 1
2 | 4953224 | SHORT SIGHT GLASS COVER | 1
3 | 4920223 | HOSETAIL SIGHT GLASS | 1
4 | 4953324 | SHORT SIGHT GLASS LENS | 1
5 | PH0991N | SHORT SIGHT GLASS O RING | 1
6 | | 8-32 BUTTON HEAD SCREW | 6
7 | PL4A000N | THREADED T FITTING - SP SIGHT GLASS | 1
PRESS FIT HOSETAIL FITTING WITH LOCTITE 620
27
FOR R.S. (4A044C0N) HOSETAIL ROTATED BY 180°
SECURE WITH LOCTITE 243
SECURE WITH LOCTITE 243
NOTE: ASSY P/No. 4A044A0D SHOWN. 4A044C0N OPPOSITE.
JW 2 041005
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE ± +/-0.5
MATERIAL REFER TO PART DRAWINGS
DRAWN DS
APPR.
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1
ISS.
6/6/03
DATE
TITLE
SIGHT GLASS ASSY - SP WET WING
DWG. No.
4A044A0D-2
SHEET 1 OF 1
A4

Figure 51. Fuel Gauge – Sight Glass

12.6 HEADER TANK LOW LEVEL WARNING (OPTION)

The J230-C may be fitted with a low level warning light in the header tank as an option. See Figure 52.

12.6.1 DESCRIPTION

The sensor is a solid-state LED which illuminates a red warning light on the instrument panel if the fuel level in the header tank falls below approximately 3 litres.

12.6.2 FUEL VALVE REMOVAL & INSTALLATION

4. Remove the header tank as detailed in Section 12.2.2.1

5. Remove the sender from the header tank.

6. Assembly is the reverse of the above. Note the torque limitations & thread sealant notes for the sender indicated in Figure 52.

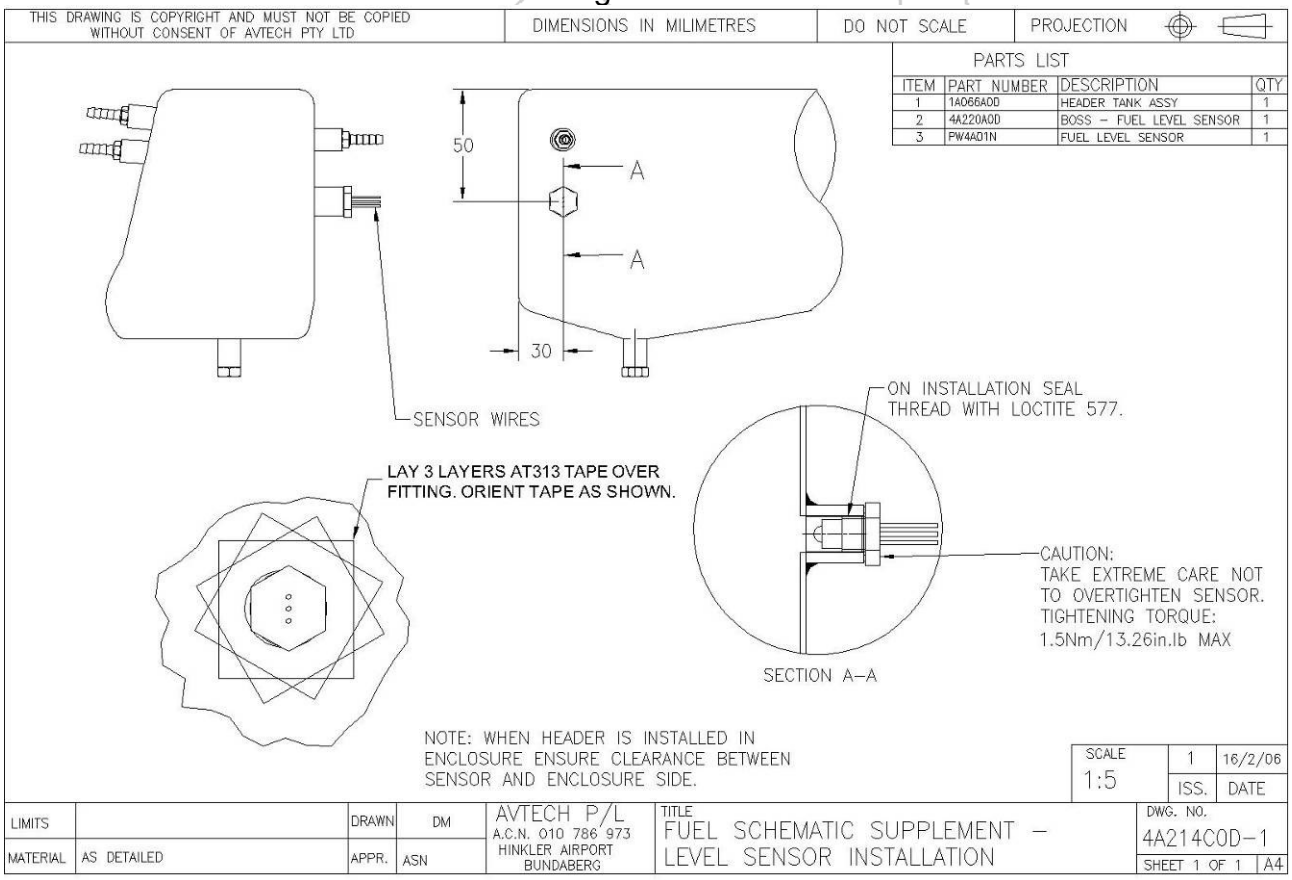

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
PARTS LIST
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 1A066A0D | HEADER TANK ASSY | 1
2 | 4A220A0D | BOSS - FUEL LEVEL SENSOR | 1
3 | PW4A01N | FUEL LEVEL SENSOR | 1
50
A
A
30
SENSOR WIRES
LAY 3 LAYERS AT313 TAPE OVER FITTING. ORIENT TAPE AS SHOWN.
ON INSTALLATION SEAL THREAD WITH LOCTITE 577.
CAUTION:
TAKE EXTREME CARE NOT TO OVERTIGHTEN SENSOR.
TIGHTENING TORQUE:
1.5Nm/13.26in.lb MAX
SECTION A-A
NOTE: WHEN HEADER IS INSTALLED IN ENCLOSURE ENSURE CLEARANCE BETWEEN SENSOR AND ENCLOSURE SIDE.
SCALE 1:5
1 16/2/06
ISS. DATE
LIMITS
DRAWN DM
MATERIAL AS DETAILED
APPR. ASN
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG
TITLE
FUEL SCHEMATIC SUPPLEMENT - LEVEL SENSOR INSTALLATION
DWG. NO.
4A214C0D-1
SHEET 1 OF 1 A4

Figure 52. Header Tank Low Level Sensor Installation

12.7 FUEL FILTERS

12.7.1 FUEL FILTER

The fuel filter is of the in-line type and is located inside the header tank enclosure behind the rear cabin bulkhead.

12.7.2 FUEL FILTER REMOVAL & INSTALLATION

1. Drain fuel system, wing tanks and header tanks.

2. Place a cloth beneath the filter to collect any fuel which may be split during removal of the filter.

3. Disconnect the fuel lines at both ends of the filter.

4. Remove filter.

5. Reverse the preceding steps for installation. Ensure waste cloth is removed.

WARNING

Ensure wing tank cap vent covers are removed.

The fuel filter must only be installed in one direction. An arrow on the side of the filter marks the fuel flow direction. Ensure this arrow is pointed towards the Firewall and Engine.

12.8 FUEL PUMPS

12.8.1 PRIMARY PUMP

The Primary Fuel Pump is located on the Starboard rear of the Engine. Refer to engine Maintenance & Instruction Manual for details.

12.8.2 SECONDARY PUMP

A secondary, electronic pump is mounted inside the header tank enclosure behind the rear cabin bulkhead. This pump is a back-up to the Primary Pump. It is recommended that the Secondary Pump be engaged at least during take-off and landing.

13 SECTION 13 – INSTRUMENTS & INSTRUMENT SYSTEMS

13.1 GENERAL

This Section describes the typical instrument installation and its operating system. Emphasis is placed on trouble shooting and corrective measures only. It does NOT deal with specific instrument repairs as this usually requires special equipment and data and should be handled by instrument specialists. Malfunctioning instruments should be either returned to JABIRU AIRCRAFT Pty Ltd or sent to an approved instrument overhaul and repair station for servicing.

Our concern here is with preventive maintenance on the various instrument systems and correction of system faults which will result in instrument malfunctions. The descriptive material, maintenance and trouble shooting information in this Section is intended to help the owner or mechanic determine malfunctions and correct them, up to the defective instrument itself, at which point an instrument technician should be called in. Some instruments, such as Oil Temperature and Pressure Gauges, are simple and relatively inexpensive and repairs will usually cost more than a new instrument. Flight instruments, on the other hand, are usually well worth repairing. The words “replace instrument” in the text, therefore, should be taken only in the sense of physical replacement in the aircraft. Whether replacement is to be with a new instrument, an exchange one, or an original instrument is to be repaired must be decided on the basis of the individual circumstances.

13.2 INSTRUMENT PANEL

The instrument panel assembly consists of a stationary panel. The instruments are screw-mounted to the panel. Two different-sized instrument panels are offered with the J230-C – both using the same construction and assembly procedures.

13.2.1 INSTRUMENT PANEL REMOVAL & INSTALLATION

The panel is secured to the Firewall and for normal maintenance is not considered removable. Access to instruments etc is gained by removing the panel fascia containing the instruments from the fascia.

1. Unscrew & remove the fascia retaining screws from around the perimeter if the panel.

2. If the panel is to be completely removed unscrew throttle knobs. Otherwise the panel maybe be supported up 75mm (3”) from the panel on the throttle shafts.

3. Remove the front fascia. It is normally best to lie the fascia on a cushion or similar while working to reduce the risk of damaging the instruments or fascia.

4. Take care not to strain connections on wires or tubes.

5. Assembly is the reverse of the above procedure.

13.2.2 INSTRUMENTS

Refer to Figure 53 & Figure 54.

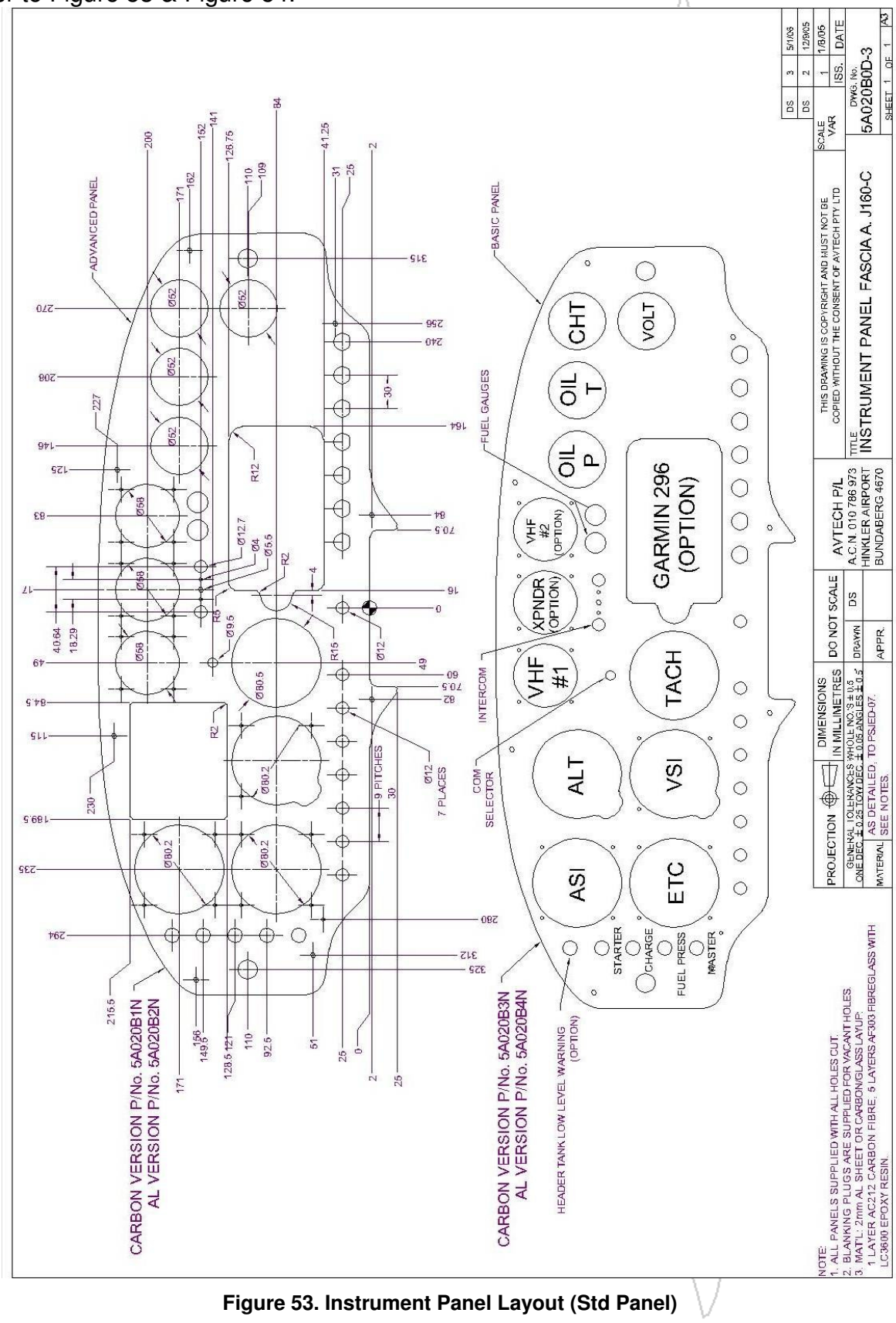


Figure 53. Instrument Panel Layout (Std Panel)

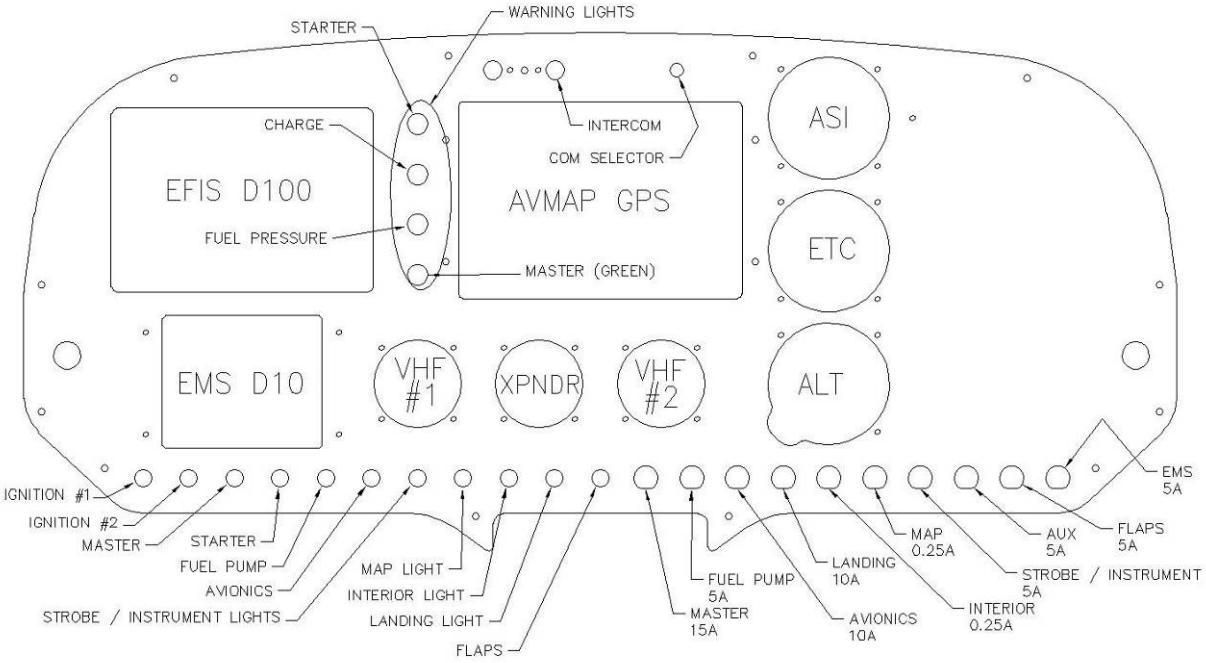


Figure 54. Instrument Panel Layout – "Glass" Instrument Panel

13.2.3 INSTRUMENT REMOVAL

Most instruments are secured to the panel with screws inserted through the panel face. To remove an instrument, disconnect wiring or pluming to the instrument, remove mounting screws and take instrument out from behind, or in some cases, from the front of the panel.

In all cases when an instrument is removed, disconnected lines or wires should be protected. Cap open lines and cover pressure connections on instrument to prevent thread damage and entrance of foreign matter. Wire terminals should be insulated or tied up so that accidental ground or short-circuiting will not occur.

13.2.4 INSTALLATION

Generally, the installation procedure is the reverse of the removal procedure. Ensure mounting screws and nuts are tightened firmly, but do not over-tighten, particularly on instruments having plastic cases. The same rule applies to connecting plumbing and wiring.

13.3 PITOT & STATIC SYSTEMS

Refer to Figures 55, 56 and 57. (Also Figure 10 where the aircraft is equipped with an AOA probe)

The pitot system conveys ram air pressure to the airspeed indicator. The static system vents vertical speed indicator (if fitted), altimeter and airspeed indicator to atmospheric pressure through plastic tubing connected to a static port. The pitot and static systems each have a water trap fitted, as shown in Figure 55, which must be checked during scheduled maintenance or after flying through rain.

13.3.1 PITOT – STATIC SYSTEM MAINTENANCE

Proper maintenance of pitot and static system is essential for proper operation of the altimeter, airspeed indicator and vertical speed indicator (if fitted). Leaks, moisture and obstructions in the pitot system will result in false airspeed indications, while static system malfunctions will affect readings of all three instruments. Cleanliness and security are the principal rules for system maintenance. The pitot tube and static ports MUST be kept clean and unobstructed.

13.3.1.1 PITOT-STATIC WATER TRAPS

Figure 55 shows the general layout of the pitot-static system. The water trap for the static system is located inside the ventral fin (the faring under the tail which covers the trim mechanism). The water trap for the pitot system is located inside the fairing at the lower end of the wing strut. Both traps should be inspected and, if necessary, drained during scheduled maintenance. In addition, if the aircraft is parked, flown or otherwise exposed to rain or moisture, the water traps should be checked and, if necessary, drained.

13.3.2 STATIC PRESSURE SYSTEM INSPECTION & LEAKAGE TEST

The following procedure outlines inspection and testing of the static pressure system, assuming that the altimeter has been tested and inspected in accordance with the current Regulations.

1. Ensure the static system is free from entrapped moisture and restrictions. Refer to

2. Ensure no alternations of airframe surface have been made which would effect the relationship between air pressure in the static pressure system and truce ambient static air pressure for any flight configuration.

3. Attach a source of suction to static pressure source opening. Figure 58 shows one method of obtaining suction.

4. Slowly apply suction until the altimeter indicates a 1000-foot increase in altitude.

CAUTION

When applying or releasing suction, do not exceed the range of either vertical speed indicator or airspeed indicator.

5. Cut off suction source to maintain a “closed” system for one minute. Leakage shall not exceed 100 feet altitude loss as indicated on the altimeter.

6. If leakage rate is within tolerance, slowly release suction source.

NOTE:
If leakage rate exceeds maximum allowable, first tighten all connections, then repeat leakage test. If leakage rate still exceeds maximum allowable use the following procedure:

1. Disconnect static pressure lines from airspeed indicator and vertical speed indicator.

2. Use suitable fittings to connect lines together so that the altimeter is the only instrument still connected into the static pressure system.

3. Repeat leakage test to check whether static pressure system or the bypassed instruments are the cause of the leakage. If instruments are at fault, they must be repaired by an "appropriately authorised repair station", or replaced. If static pressure system is at fault, use the following procedure to locate the leakage.

4. Attach a source of positive pressure to the static source opening. Figure 58 shows one method of obtaining positive pressure.

CAUTION

Do not apply positive pressure with airspeed indicator or vertical speed indicator connected to the static pressure system.

5. Slowly apply positive pressure until altimeter indicates a 500-foot decrease in altitude and maintain this altimeter indication while checking for leaks. Coat line connectors and static course flange with solution of mild soap and water, watching for bubbles to locate leaks.

6. Tighten leaking connections. Repair or replace parts found to be defective.

7. Reconnect airspeed and vertical speed indicators into static pressure systems and repeat leakage test steps 3 through 6.

13.3.3 PITOT SYSTEM INSPECTION & LEAKAGE TEST

To check pitot system for leaks, place a piece of rubber or plastic tubing over pitot tube, close opposite end of tubing and slowly roll up tube until airspeed indicator registers in the cruise range. Secure tube and after a few minutes recheck airspeed indicator. Any leakage will have reduced the pressure in the system, resulting in a lower airspeed indication. Slowly unroll tubing before removing it, so pressure may be released gradually. Otherwise instrument may be damaged. If the test reveals a leak in the system, check all connections for tightness.

13.3.4 BLOWING OUT LINES

Condensation may collect at points in the pitot system and produce a partial obstruction. To clear line, disconnect airspeed indicator. Using low pressure air, blow from indicator end of line toward pitot tube.

CAUTION

Never blow through pitot or static lines towards the instruments.

Like pitot lines, static lines may be kept clear and connections tight. When necessary, disconnect static line at first instrument to which it is connected, then blow line clear with low pressure air. Check all static pressure lines for tightness. If hose or hose connections are used, check for general condition and clamps for security. Replace hose which has cracked, hardened or shows signs of deterioration.

13.3.5 REMOVAL & INSTALLATION OF COMPONENTS

To remove pitot mast, remove the two rivets fastening it to the wing strut and pull it out from the strut far enough to disconnect the pitot line.

The static mast is fixed and cannot be removed. To gain access to disconnect the static tube from the static mast remove the VHF antenna cover at the top of the fin. Pitot and static tubing is removed in the usual manner.

Installation of tubing will be simplified if a guide wire is drawn in as the tubing is removed. When replacing tubing and fittings, tighten connections firmly, but avoid overtightening and distortion of fittings or tubing.

13.3.6 TROUBLE SHOOTING – PITOT STATIC SYSTEM

Table 10. Trouble Shooting – Pitot-Static System

Trouble	Probable Cause	Remedy
Low or sluggish airspeed indication (normal airspeed and vertical speed)	Pitot tube obstructed, leak or obstruction in pitot line	Test pitot tube and line for leaks or obstructions. Blow out tube and line, repair or replace damaged line.
Incorrect or sluggish response (all 3 instruments)	Leaks or obstruction in static line	Test line for leaks and obstructions. Repair or replace line, blow out obstructed line.

13.3.7 TROUBLE SHOOTING – AIRSPEED INDICATOR

Table 11. Trouble Shooting – Airspeed Indicator

Trouble	Probable Cause	Remedy
Hand fails to response	Pitot pressure connection not properly connected to pressure line from pitot tube	Test line and connections for leaks. Repair or replace damaged line, tighten connections
	Pitot or static lines clogged	Check line for obstructions. Blow out lines.
Incorrect indication or hand oscillates	Leak in pitot or static lines	Test lines and connections for leaks. Repair or replace damaged lines, tighten connections.
	Defective mechanism or leaking diaphragm	Substitute known-good indicator and check reading. Replace instrument.
Hand vibrates	Excessive vibration	Check panel shock mounts. Replace defective shock mounts
	Excessive tubing vibration	Check clamps and line connections for security. Tighten clamps and connections, replace tubing with flexible hose.

13.3.8 TROUBLE SHOOTING – ALTIMETER

Table 12. Trouble Shooting – Altimeter

Trouble	Probable Cause	Remedy
Instrument fails to operate	Static line plugged	Check line for obstructions. Blow out lines
	Defective mechanism	Substitute known-good altimeter and check reading. Replace instrument
Incorrect indication	Hands not carefully set	Reset hands with knob
	Leaking diaphragm	Substitute known-good altimeter and check reading. Replace instrument.
	Pointers out calibration	Compare reading with known-good altimeter. Replace instrument
Hand oscillates	Static pressure irregular	Check lines for obstruction or leaks. Blow out lines, tighten connections.

Trouble	Probable Cause	Remedy
	Leak in airspeed or vertical speed indicator installations	Check other instruments and system plumbing for leaks. Blow out lines, tighten connections

13.3.9 TROUBLE SHOOTING – VERTICAL SPEED INDICATOR (OPTION)

Table 13. Trouble Shooting – Vertical Speed Indicator (Option)

Trouble	Probable Cause	Remedy
Instrument fails to operate	Static line plugged	Check line for obstructions. Blow out lines.
	Static line broken	Check line for damage, connections for security. Repair or replace damaged line, tighten connections.
Incorrect indication	Partially plugged static line	Check line for obstructions. Blow out lines
	Ruptured diaphragm	Substitute known-good indicator and check reading. Replace instrument
	Pointer off zero	Reset pointer to zero
Pointer oscillates	Partially plugged static line	Check line for obstructions. Blow out lines
	Leak in static line	Test lines and connections for leaks. Repair or replace damaged lines, tighten connections.
	Leak in instrument case	Substitute known-good indicator and check reading. Replace instrument.
Hand vibrates	Excessive vibration	Check shock mounts. Replace defective shock mounts.
	Defective diaphragm	Substitute known-good indicator and check for vibration. Replace instrument.

13.3.10 PITOT TUBE ALIGNMENT

Refer to Figure 56

For correct airspeed indication, pitot tube must be properly aligned. Open end of tube must be perpendicular to longitudinal axis of the aircraft. Refer to Figure 56 for alignment details.

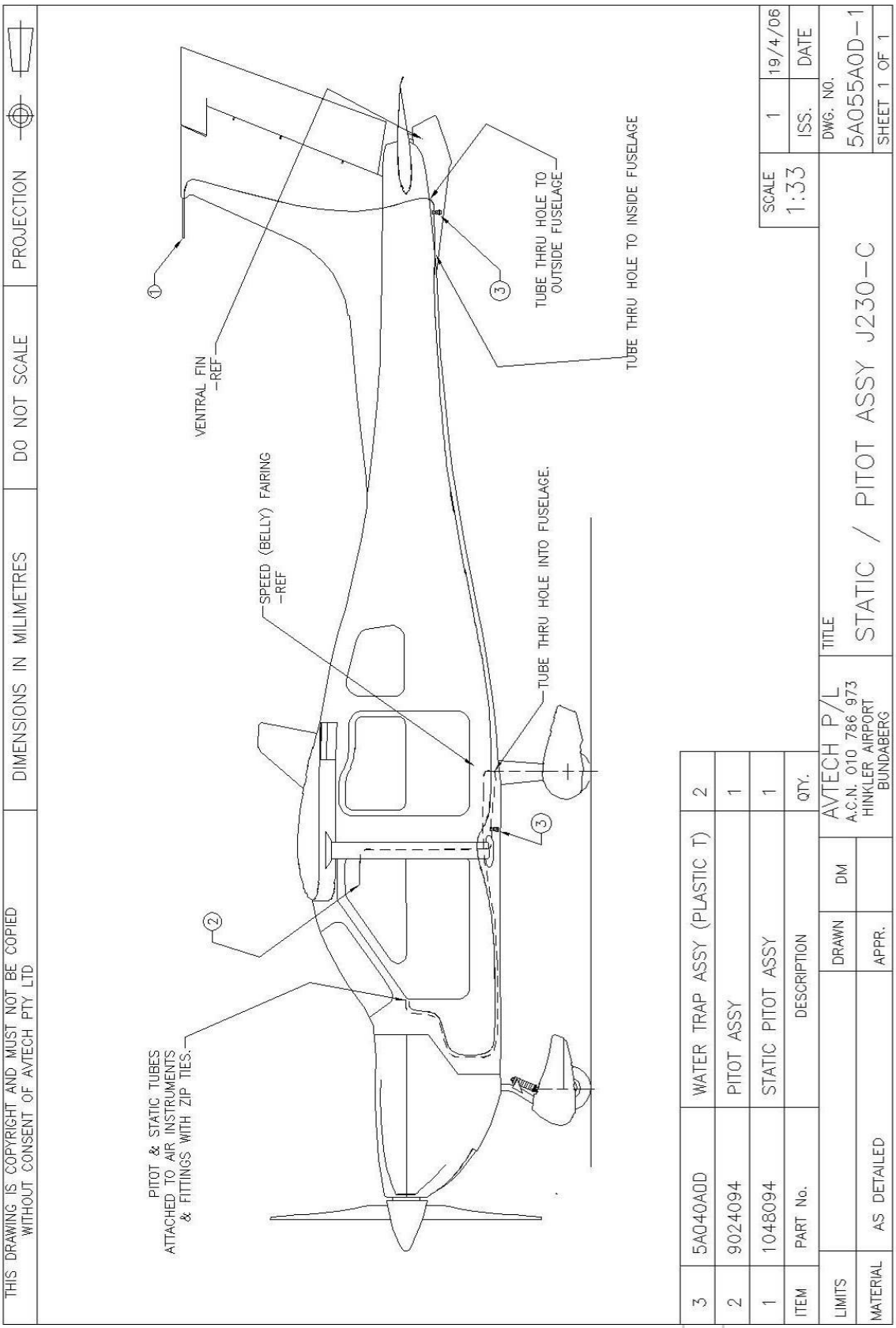
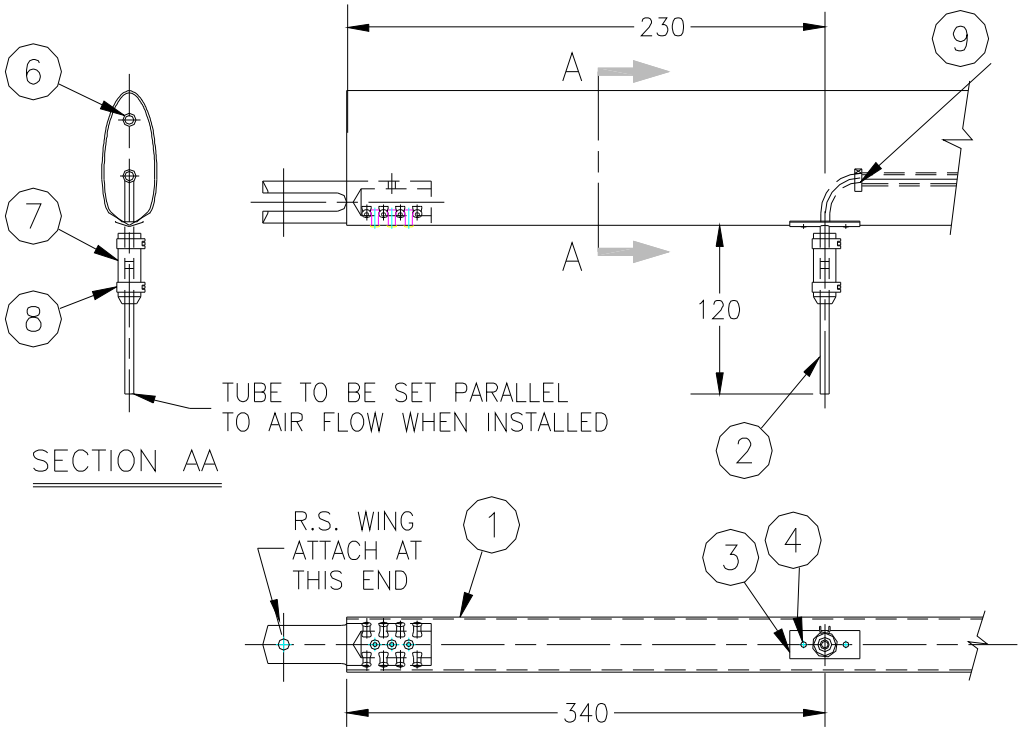

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
VENTRAL FIN -REF
SPEED (BELLY) FAIRING -REF
TUBE THRU HOLE TO OUTSIDE FUSELAGE
TUBE THRU HOLE TO INSIDE FUSELAGE
TUBE THRU HOLE INTO FUSELAGE.
PITOT & STATIC TUBES ATTACHED TO AIR INSTRUMENTS & FITTINGS WITH ZIP TIES.
3 5A040A0D WATER TRAP ASSY (PLASTIC T) 2
2 9024094 PITOT ASSY 1
1 1048094 STATIC PITOT ASSY 1
ITEM PART No. DESCRIPTION QTY.
LIMITS
MATERIAL AS DETAILED
DRAWN DM
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG
TITLE
STATIC / PITOT ASSY J230-C
SCALE 1:33
ISS. 1 19/4/06
DATE
DWG. NO. 5A055A0D-1
SHEET 1 OF 1

Figure 55. Pitot-Statice System – Water Trap Locations



ITEM	PART No.	DESCRIPTION	QTY.
9	50449N	TUBE BENT PITOT	1
8		HOSE CLAMP *MS8242	2
7	504439N	HOSE COUPLING	1
6	PV0029N	PVC TUBE 1/4" ID	1
			1
4	PH0029N	RIVET	2
3	504429N	MOUNT PLATE PITOT TUBE	1
2	504419N	TUBE STRAIGHT PITOT	1
1	2000093	WING STRUT ASSY	1

Drawing 9024094/2 PITOT ASSEMBLY

Figure 56. Pitot Assembly – Std Pitot

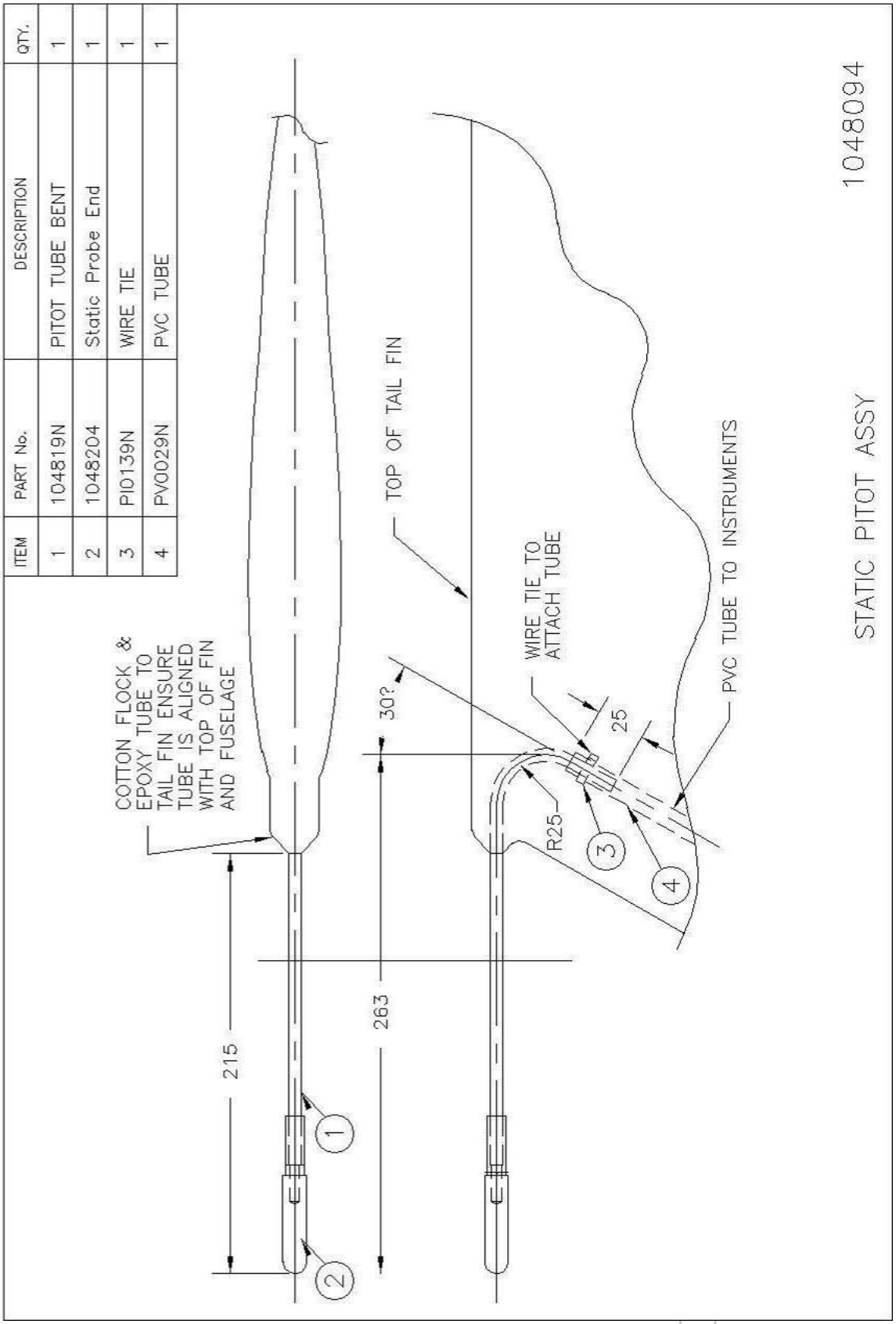
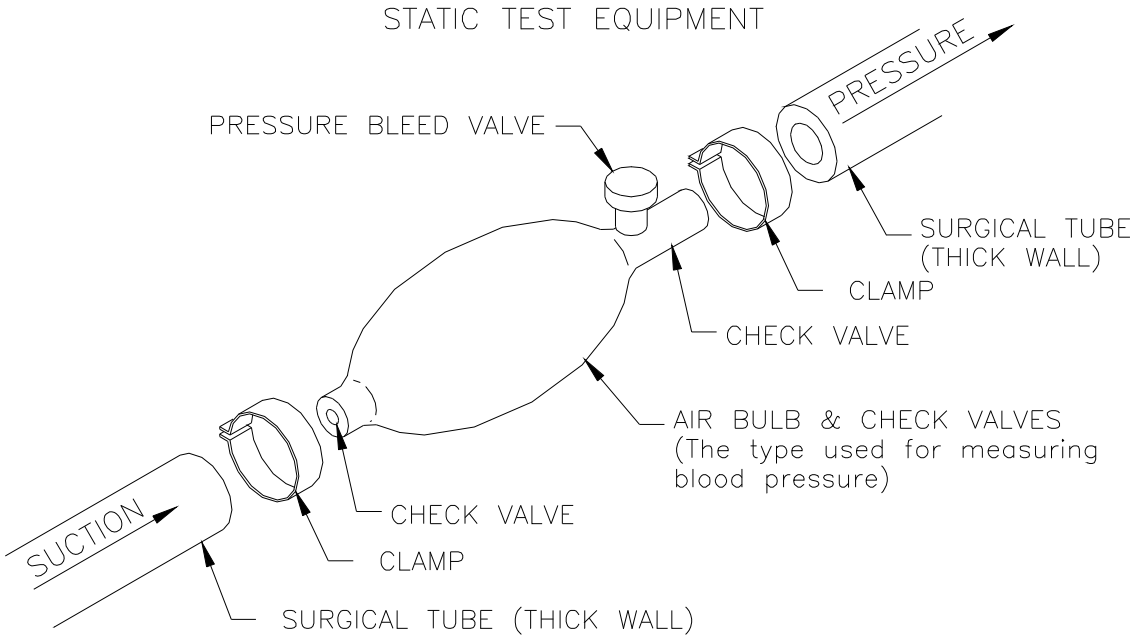

ITEM | PART No. | DESCRIPTION | QTY.
1 | 104819N | PITOT TUBE BENT | 1
2 | 1048204 | Static Probe End | 1
3 | PI0139N | WIRE TIE | 1
4 | PV0029N | PVC TUBE | 1
1048094
STATIC PITOT ASSY
TOP OF TAIL FIN
WIRE TIE TO ATTACH TUBE
PVC TUBE TO INSTRUMENTS
COTTON FLOCK & EPOXY TUBE TO TAIL FIN ENSURE TUBE IS ALIGNED WITH TOP OF FIN AND FUSELAGE
30?
25
R25
215
263
1
2
3
4

Figure 57. Static Probe System Assembly



TO APPLY SUCTION:-

1: Squeeze air bulb to expel as much air as possible
2: Hold suction hose firmly against static pressue tube opening
3: Slowly release air bulb to obtain desired suction, then pinch hose tightly to maintain suction in the system
4: After leak test, slowly release suction by allowing a small amount of air into static system, wait for vertical speed indicator to return to zero, and repeat as required.

TO APPLY PRESSURE:-

CAUTION: DO NOT APPLY PRESSURE WITH AIRSPEED INDICATOR OR VERTICAL SPEED INDICATOR CONNECTED TO STATIC SYSTEM

1: Hold pressure hose firmly against static pressue tube opening
2: Slowly squeeze air bulb to apply desired pressure to static system
3: Release pressure slowly by opening bleed valve

Drawing 9017093/1 STATIC TEST EQUIPMENT

Figure 58. Static System Test

13.4 TACHOMETER

The tachometer is electronic and driven from a magnetic pick up. Should the tachometer fail to operate:

1. Check 10amp instrument circuit breaker and re-set if necessary.

2. Check 15amp main circuit breaker and re-set if necessary.

3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.

4. Check wiring (see Wiring Diagram Figure 59).

5. Check correct installation of magnetic sensor on engine (Refer to engine Instruction & Maintenance Manual)

Should the instrument give incorrect readings:

1. Check 10amp instrument fuse and replace if necessary.

2. Check 15amp main circuit breaker and re-set if necessary.

3. Check correct installation of magnetic sensor on engine (Refer to engine Instruction & Maintenance Manual)

4. Refer to an Authorised Service Centre to have Alternator and Regulator checked.

5. Refer instrument to VDO Service Centre or JABIRU AIRCRAFT Pty Ltd for inspection and possible repair.

13.5 OIL PRESSURE GAUGE

The Oil Pressure Gauge is an electronic instrument. Should the instrument fail to operate:

1. Check 10amp instrument fuse and replace if necessary.

2. Check 15amp main circuit breaker and re-set if necessary.

3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.

4. Check wiring at Sender for security.

5. Replace Sender.

6. Replace Gauge.

13.6 OIL TEMPERATURE GAUGE

The Oil Temperature Gauge is an electronic instrument. Should the instrument fail to operate:

1. Check 10amp instrument fuse and replace if necessary.

2. Check 15amp main circuit breaker and re-set if necessary.

3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.

4. Check wiring at Sender for security.

5. Replace Sender.

6. Replace Gauge.

13.7 CYLINDER HEAD TEMPERATURE GAUGE

The Cylinder Head Temperature Gauge is a Thermo-couple instrument and is not connected to the aircraft electrical system. See Wiring Diagram Figure 59. Should the instrument fail to operate:

1. Check for loose terminal connections and damage to wiring.

2. Replace thermo-couple.

3. Replace Gauge.

13.8 EXHAUST GAS TEMPERATURE GAUGE (OPTION)

The Exhaust Gas Temperature Gauge is a Thermo-couple instrument and is not connected to the aircraft electrical system. See Wiring Diagram Figure 59. Should the instrument fail to operate:

1. Check for loose terminal connections and damage to wiring.

2. Replace thermo-couple.

3. Replace Gauge.

13.9 HOURMETER

The Hourmeter is an electronic instrument. An optional Airspeed Switch may be fitted. Should the instrument fail to operate:

1. Check 10amp instrument fuse and replace if necessary.

2. Check 15amp main circuit breaker and re-set if necessary.

3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.

4. Replace Gauge.

13.10 MAGNETIC COMPASS

The Magnetic Compass is liquid-filled, with expansion provisions to compensate for temperature changes. It is equipped with compensating magnets adjustable from the front of the case. No maintenance is required on the compass except an occasional check on a compass rose for adjustment and compensation.

13.11 EFIS (WHERE EQUIPPED)

A detailed description of the instrument, it's installation and operation can be found in the appropriate Dynon User & Installation manuals. In brief, the EFIS is an electric instrument which generates a digital display of:

- Airspeed (true or indicated)
- Vertical Speed
- Heading
- G acceleration
- System voltage
- Angle of attack
- Outside air temperature
- Roll angle
- Pitch – artificial horizon
- Balance ball
- Clock

The EFIS incorporates an internal battery to allow the instrument to run for a minimum of 1.5 hours.

13.12 EMS (WHERE EQUIPPED)

A detailed description of the instrument, it's installation and operation can be found in the appropriate Dynon User & Installation manuals. In brief, the EMS is an electric instrument which in the J230-C generates a digital display of:

- RPM
- Cylinder head temperatures (up to 6)
- Exhaust gas temperatures (up to 6)
- Oil temperature
- Oil pressure
- Fuel flow
- Fuel pressure
- System voltage
- Amps
- Carburettor temperature
- Manifold air pressure

14 SECTION 14 – ELECTRICAL SYSTEMS

14.1 ELECTRICAL POWER SUPPLY SYSTEM

Electrical energy for the aircraft is supplied by a 12 volt, direct-current, single-wire, negative ground electrical system. A 12-volt battery supplies power for starting and furnishes a reserve source of power in the event of electrical power system failure. An engine-driven Alternator is the normal source of power during flight and maintains a battery charge controlled by a voltage regulator.

The following paragraphs provide brief descriptions of the elements of the electrical system. They should be read in conjunction with the Wiring Diagram in Figures 59 and 60.

14.2 WIRING DIAGRAM

The Wiring Diagram is shown in Figures 59 and 60.

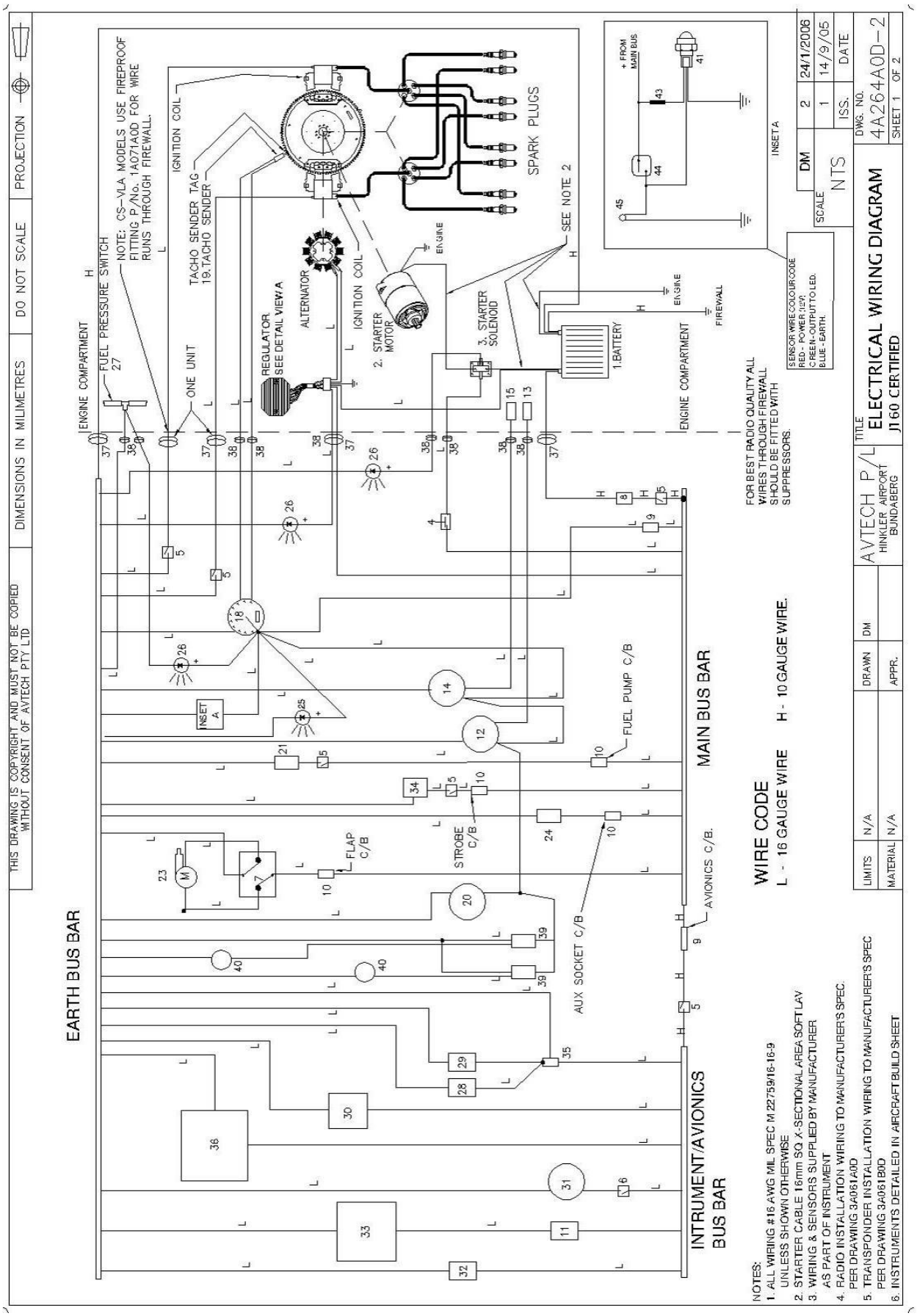


Figure 59. Wiring Diagram Sheet 1.

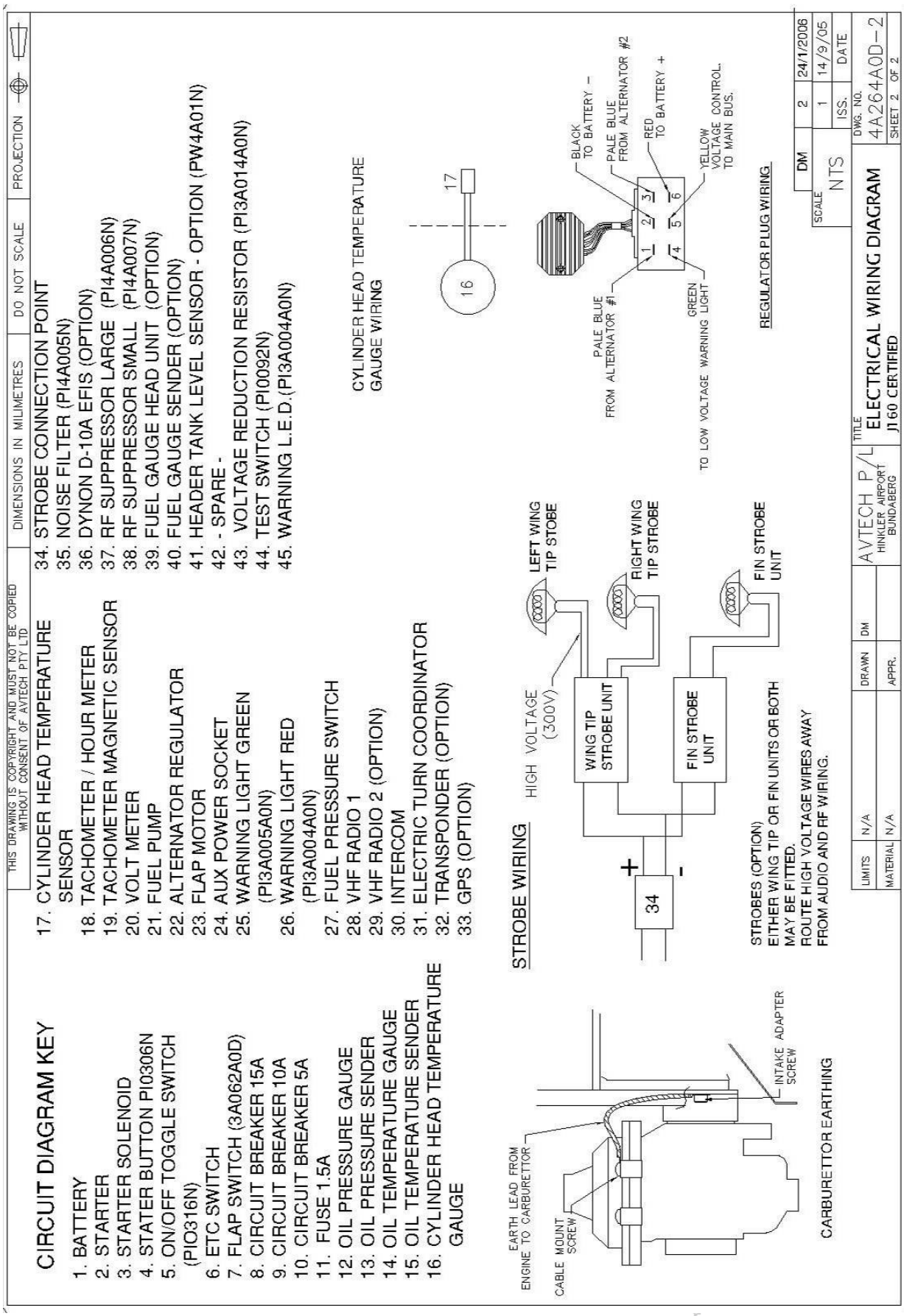


Figure 60. Wiring Diagram Sheet 2.

14.3 BUS BARS

Electrical power for electrical equipment and installations is supplied through Bus Bars. The bus bars are mounted at the rear of the lower instrument panel. Access is gained by removing the main instrument panel (see Paragraph 13.2.1).

14.3.1 MASTER SWITCH

When using a key switch, the Master Switch activates a relay which in turn powers the bus bars. When using a toggle switch, it activates the power direct from the battery.

Refer to Wiring Diagram at Figure 59.

14.4 BATTERY POWER SYSTEM

Refer also to Wiring Diagram at Figure 59.

14.4.1 BATTERY

The battery is 12-volts and approximately 16 ampere-hour capacity. The battery is mounted in the engine compartment.

14.4.2 BATTERY TROUBLE SHOOTING

Trouble Shooting is limited to inspection of wiring and terminals, battery charge condition and battery solenoid.

14.4.3 REMOVAL AND INSTALLATION

1. Disconnect the battery security strap.

2. Disconnect the ground cable from the negative battery terminal (black insulation).

WARNING

When installing or removing battery, always observe the proper polarity with the aircraft electrical system (negative to ground). Reversing the polarity, even momentarily, may result in failure of semi-conductor devices (alternator diodes, radio protection diodes and radio transistors).

3. Disconnect the cable from the positive battery terminal.

4. Lift the battery out of the battery box.

5. To replace the battery, reverse this procedure.

14.4.4 CLEANING THE BATTERY

For maximum efficiency the battery and connections should be kept clean at all times.

1. Remove the battery and connections in accordance with the preceding paragraph.

2. Wipe the battery cable ends, battery terminals and the entire surface of the battery with a clean cloth moistened with a solution of bicarbonate of soda (baking soda) and water.

3. Rinse with clear water, wipe off excess water and allow battery to dry.

4. Brighten up cable ends and battery terminals with emery cloth or a wire brush.

5. Install the battery in accordance with the preceding paragraphs.

6. Coat the battery terminals with petroleum jelly or an ignition spray product to reduce corrosion.

14.4.5 BATTERY BOX

The battery box is located on the firewall in the engine compartment.

14.5 STARTER SOLENOID

The starter solenoid is a sealed unit. Service is limited to inspection of terminals for security and replacement of the unit.

14.6 VOLTAGE REGULATOR

The voltage regulator is a sealed unit. Service is limited to inspection of terminals for security and replacement of the unit.

14.7 STROBE SYSTEM (OPTION)

A white strobe light may be installed in the rear lower fuselage or in the cabin roof. The power source for the strobe light is located behind the fuel tank.

WARNING

The strobe system is a high-voltage device. Do Not remove or touch tube assembly while in operation. Wait at least 5 minutes after turning off power before commencing any activity near the strobe light.

14.8 AUXILIARY POWER SOCKET

The jabiru is fitted with an auxiliary power socket that accepts a 12V cigarette lighter plug. The circuit breaker for this plug is rated a 10 Amps. However it should be noted that the maximum continuous alternator output is also 10 Amps.

14.9 ELECTRICAL LOAD ANALYSIS (ELA)

An ELA has been carried out as part of the aircraft's certification basis. Any changes to the electrical system which affect the ELA require a new ELA to be raised. For Special category LSAs' this must be approved by Jabiru Aircraft.

14.10 RADIO WIRING DIAGRAM (OPTION)

The optional aircraft radio system diagram is provided with the radio manuals.

14.10.1 VHF ANTENNA INSTALLATION

The VHF antenna used consists of two aluminium bars permanently bonded in place inside the spar channel of the vertical fin. Figure 61 shows the position details of the two bars.

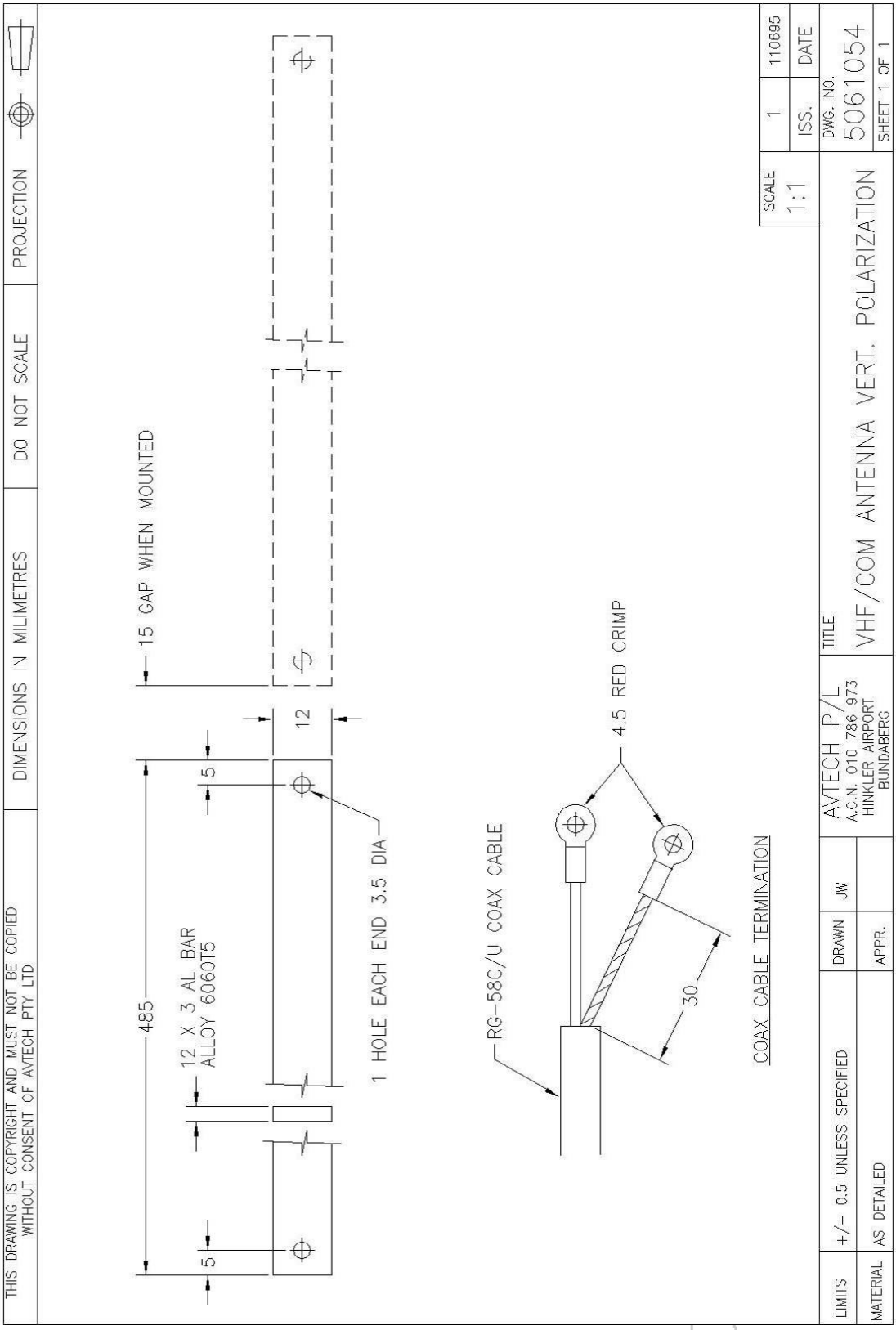


Figure 61. VHF Antenna Installation

15 SECTION 15 – PAINTING & FINISHING

15.1 EXTERIOR

15.1.1 PAINTING

The following painting procedure, as used at the Jabiru factory, had proven successful in ensuring good presentation of the aircraft.

2-part paint should be used for best results. Due to the variation between different paints, we recommend carefully following the pack recommendations relating to surface preparation and safety.

Use a bare minimum of undercoat, preferably white or cream, and topcoat to keep weight down.

If you have had no previous painting experience, a short course may be available from TAFE.

NOTE:
It is very easy to dramatically increase the weight of the aircraft with a heavy paint job. Care must be taken to use the absolute minimum amounts of filler, undercoat and topcoat. Certain brands of filler are significantly lighter that others – checking densities and using lighter materials can save around 5kg on a typical Jabiru airframe.

15.1.2 MATERIALS RECOMMENDED

15.1.2.1 PAINTS / FILLERS

• Top Coat	5 Lts	MUST BE WHITE
• Base Coat	4 Lts	Ensure compatibility with top coat.
• Polyester Filler	4 kg	
• Spot Putty	1 lb tube	Claw Glaze recommended

15.1.2.2 SANDPAPER

Note: aluminum oxide type most effective

• 1st all over sand	150 grit	20 3M Brand
• Bog Sand	120 grit	20 3M Brand
• Spot Putty Sand	180 grit	20 3M Brand
• Final Sand	320 grit	20 3M Brand

15.1.3 PAINTING EQUIPMENT REQUIRED

- Random Orbital Sander (approximately A$70.00)
- Gas Mask
- Compressor
- Spray Gun

15.1.4 PAINTING PROCEDURE:

1. Wash all parts to remove release agent.

Note: Prepare all parts separately and paint separately.

2. Completely sand all outside surface area with 150 grit to give paint adhesion. The factory uses a Random Orbital Sander and 150mm Stickit discs.

Note: Ensure that glass is not cut into in the sanding process

3. Grind excess resin from joints being careful not to grind into fiberglass layers. Take care not to grind into the horn of any control surfaces.

4. A clean wire brush is used to search out any crab holes or pinholes. Give the entire aircraft a good scrub all over especially around corners etc.

5. Wear a breathing respirator with painting cartridges right from initial sanding through to painting.

Hint: Body Filler sets quickly in high temperatures particularly when larger mixes are necessary. Use cold packs under the Body Filler board to extend setting time.

6. Follow instructions carefully and experiment with setting times.

7. On large radius (e.g. sides of fuselage) an extra large homemade spatula (9" thin tin plate) is very handy when applying Body Filler.

8. When filling up to window edges, grind chamfer onto edge of window to give depth for bog adhesion.

WARNING

THE GEL COAT IS MICRO THIN, SO SANDING IS ALWAYS A CAREFUL PROCEDURE. IF GEL COAT IS INADVERTENTLY PENETRATED DO NOT CONTINUE SANDING INTO STRUCTURAL GLASS.

9. With the surface satisfactorily prepared white primer is required only on the discolored areas (i.e. Body Filled areas). Pin holes become evident after the primer is applied so use "spot putty" to fill. Be careful and meticulous to find all pin holes because primer and top coat will not fill holes.

10. Your final product can only be as good as your preparation. Remember, paint does NOT cover a multitude of sins.

11. The factory uses a low-pressure pot gun for spraying at pressures from 60-100 psi.

12. It is mandatory that exterior color is WHITE only broken if desired, by pin strips on the vertical surfaces (i.e. Sides of fuselage) but not horizontal surfaces (i.e. top of wings or fuselage) as the heat build up under the tape in hot sun is considerable.

13. After filling all pinholes spray another coat of primer on the discolored areas. An all over primer coat is not required over the gel coat as gel coat is a sufficient undercoat.

14. The final rub is with 320 grit all over and if satisfied with the surface preparation (remember paint will simply change color not hide lumps, bumps, scratches and holes) blow off the dust and give an all over wipe with a tack cloth to pick up the final dust particles.

15. Wash down the floor of the spray area to settle dust and proceed to spray as per your selected technique.

16. You are now ready to spray final coat. GOOD LUCK!

WARNING

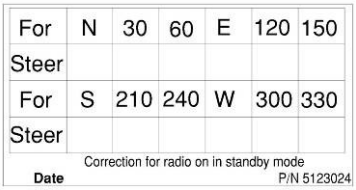
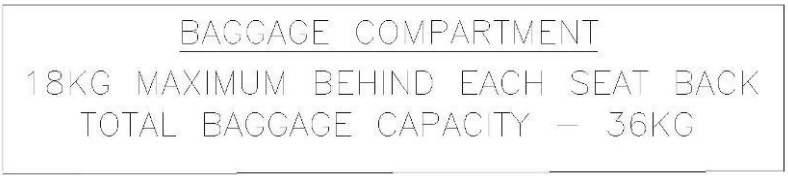
The Jabiru aircraft is only approved to be painted in basic White colour, so as to minimise the effects of heat and ultra-violet light to the aircraft structure.

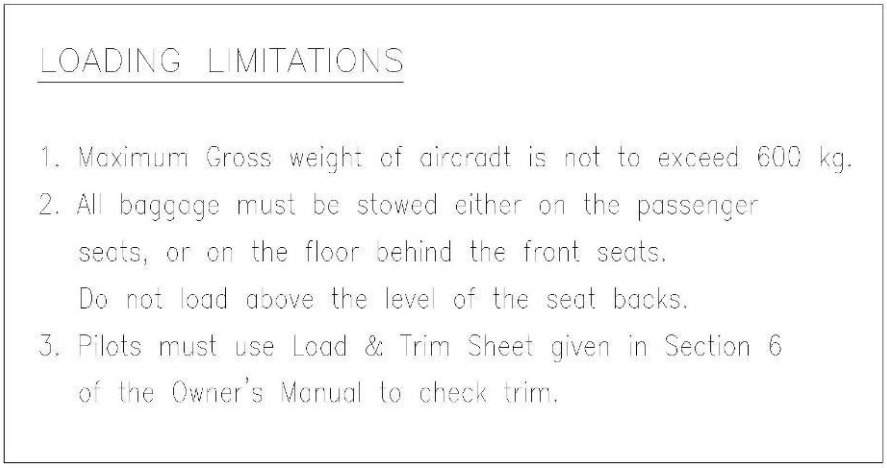
In addition, colour (including stripes etc) must not be applied to horizontal, upper surfaces.

16 SECTION 16 - PLACARDS

16.1 J230-C DECALS

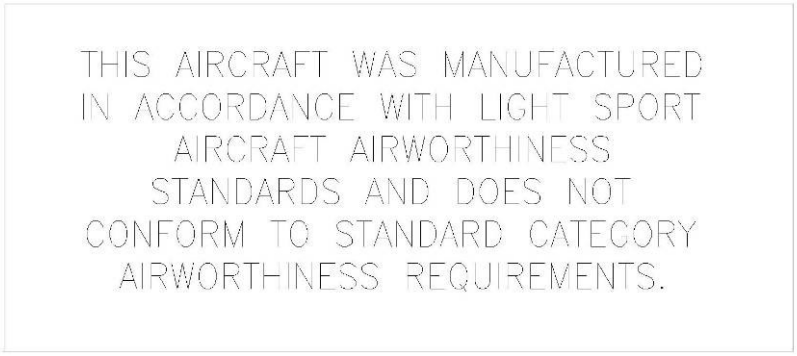
Table 14. J230-C Decals

Decal Detail	Preview
Warning Placard P/No. 5A051A0D	 Fitted above windscreen in front of wing carry through beam across to the left side.
Compass Card P/No. 5123024	 Fit in compass card holder attached to compass.
EFIS Warning P/No. 5A042A0D 1 OFF	 Fit to upper frame of DYNON EFIS if equipped
EMS Warning P/No. 5A042B0D 1 OFF	 Fit to upper frame of DYNON EMS (if equipped)
Baggage P/No. 5111154	 Fit to inside of fuselage on right side just below horizontal rib. Locate vertical line in line with base of bulkhead.
Baggage P/No. 5A037A0D	 Fit to inside of fuselage on right side just below middle rear window.

Decal Detail	Preview
Loading Limitations P/No 5A056A0D	 Fitted on inside of fuselage of RHS of cabin below Rear Window.
Engine Oil Details. P/No. 5A008A0D 1 OFF	 Attach to upper cowl beside oil door or to oil door itself.
Nose Wheel Inflation. P/No. 5A062A0D	 Attach to left side of nose wheel spat.
Main Wheel Inflation. P/No. 5A061A0D	 Attach to outsides of main wheel spats
Baggage Zone Decal P/No: 5A063A0D	 Baggage area on right side below horizontal rib. Position line 500mm aft of Whalebone

16.2 COCKPIT PLACARDS GENERAL

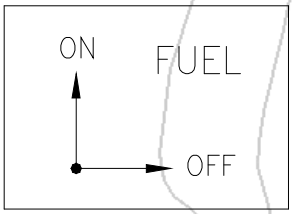
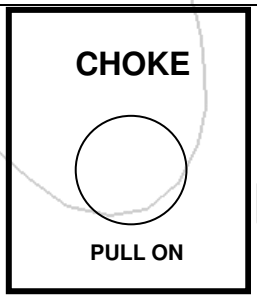
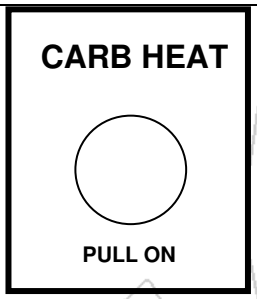
Table 15. General Cockpit Decals

Decal Detail	Preview
LSA Warning decal P/No 5A060A0D	 To be fitted above the windscreen to the right of the Warning Placard
Owners Manual P/No 5036194	 Fitted to Inside of RH Door above the Door Pocket.
Door Open LHS P/No5027094	 Fitted to the Outsides of LH Door Above the Door Catch Lever
Door Open RHS P/No 5028094	 Fitted to the outside of RH Door Above the Door Catch Level
Door String Placard P/No5026094	 Fitted on Inside of both Doors Above Door Handle.
No Smoking P/No 5A035A0D	 Placed in a prominent position on the instrument panel.
Fuel Contents P/No. 5A022A0D	 Fitted to sight glasses of wing fuel tanks.
Fuel Contents 5A050A0D	 Fitted beside fuel gauges in instrument panel

16.3 COCKPIT CONTROL DECALS

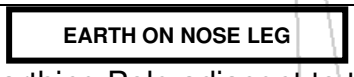
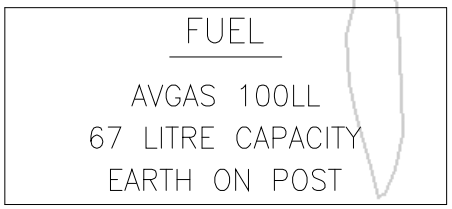
Table 16. Cockpit Control Decals

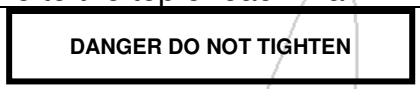
Decal Detail	Preview

Decal Detail	Preview
Trim Position P/No5024094	 Fitted on the Top of the Main Beam Beside the trim control
Fuel Tap Position P/No 502319N	 Fitted on the Main Beam in front of the Fuel SELECTOR Valve
Choke Cable P/No5051094	 Fitted at the base of the choke cable.
Carby Heat P/No 5026194	 Fitted at the base of the CARBY Heat Cable.

16.4 EXTERNAL FUSELAGE

Table 17. External Fuselage Decals

Decal Detail	Preview
Static Port (P/No 5043094	 Attach to LHS of Vertical Fin in line with Static Tube
Electrical Earthing P/No 5078064	 Attach above the Earthing Pole adjacent to the Fuel Filler Cap.
Fuel Grade P/No 5091344 2 OFF	 Attach to top skin of wing adjacent to Fuel Filler Cap.

Decal Detail	Preview
No Step P/No 5A006A0D Qty 2 Required	 Attach one to the top of each main wheel spat.
Wing Bolt Tightening P/No 5039094 Qty 8 Required	 Attach to the fuselage and wings beside each wing, and lift strut attachment fitting.

17 SECTION 17 - FAIRINGS

The J230 is fitted with fairings around the wing roots, wing struts, under the fuselage and wheel spats.

17.1 WHEEL SPATS

Removal and installation of wheel spats is covered under 6.3.4Main Wheel Fairing Removal and Installation and 6.5.4Nose Wheel Speed Fairing Removal and Installation.

17.2 WING FAIRINGS

17.2.1 REMOVAL AND INSTALLATION

These fairings are attached using self tapping screws. The fairing can be removed once these screws have been taken out. When removing the wing strut fairings care should be take to avoid scratching the strut. Installation is the opposite of removal. Care should be take when tightening self tapping screws as when screwing into fibreglass it very easy to strip the hole so that it doesn't not tighten.

17.3 REPAIR.

The fairings on the J230 are made from 2 layers of 300gram/m^2 twill weave fibre glass and epoxy resin. When damaged they may be repaired using an equivalent layup across the damage and normal fibreglass repair techniques. Once repaired refer SECTION 15 – PAINTING & FINISHING for repainting and filling techniques.

Self tapper holes that become stripped may be repaired using be using the next size up self tapper (from 6 gauge to 8 gauge) however it is not recommended to go any larger.
The hole maybe filled using 5 minute araldite and redrilled again to the original, smaller size again. If the hole has been exposed to oil or similar it will need to be cleaned with a solvent such as acetone.

18 APPENDIX I - JABIRU 3300 ENGINE

Appendix 1 of this Manual is the Instruction and Maintenance Manual for the Jabiru 3300 engine.

Please insert your copy of the INSTRUCTION AND MAINTENANCE MANUAL that comes with your engine into this section if you are printing this out.

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19 APPENDIX II - JABIRU ENGINE PARTS BOOK

Please insert your copy of the INSTRUCTION AND MAINTENANCE MANUAL that comes with your engine into this section.

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20 APPENDIX III – ENGINE INSTALLATION MANUAL

Please insert your copy of the INSTALLATION MANUAL that comes with your engine into this section.

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21 APPENDIX IV – PROPELLER SERVICE MANUAL

21.1 APPROVED INSTALLATIONS

The following combinations are approved.

Table 18. Approved Propeller Installations

Airframe	Engine	Propeller	Dia x Pitch	Remarks/Limits
Jabiru J230-C	Jabiru 3300	C000262	1524 x 1346 (60” x 53”)	Not above 3300 RPM

21.2 IDENTIFICATION STAMPINGS

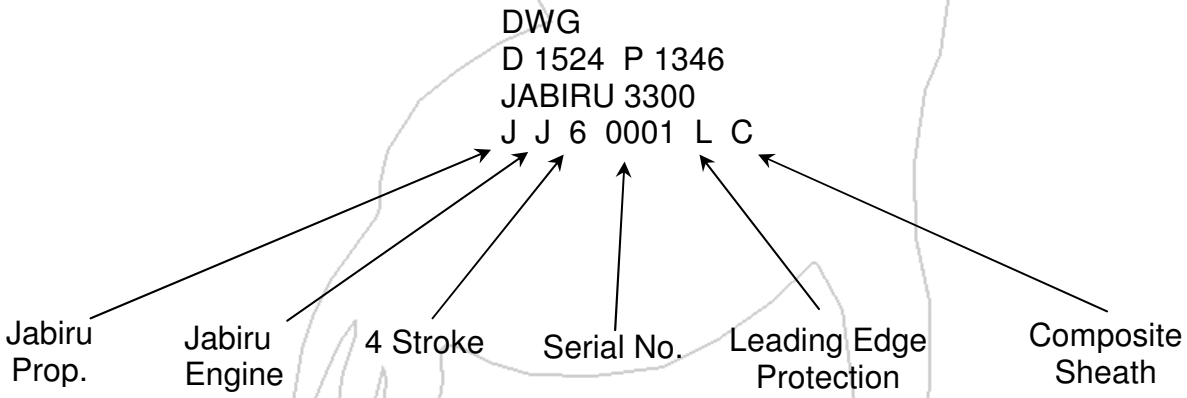
Each propeller is marked with the particulars indicated below:

1. The Propeller Drawing No.

2. The diameter and pitches in metres, proceeded by the letters "D" and "P" respectively.

3. The type of engine for which the propeller has been designed.

4. Manufacturing Serial No.



21.3 DESCRIPTION

The Propellers are constructed from 4 laminations of approved species timber and are manufactured in accordance with the relevant approved Drawing. They are single piece 2 blade propellers with an inlaid leading edge (urethane).

The propeller finish is a composite sheath, and clear epoxy paint (JABIRU Part No. PP0039N).

WARNING

ENSURE IGNITION SYSTEM IS "OFF" BEFORE COMMENCING ANY WORK ON PROPELLER.

DO NOT RUN ENGINE WITH PROPELLER DISCONNECTED OR ENGINE DAMAGE WILL RESULT.

21.4 INSTALLATION

Refer to Figure 62.

The Propeller is bolted to the Propeller Drive Flange with 6 x AN4 aircraft grade bolts attaching to Nyloc Nuts. There are 8 Belleville Washers between the Aluminium Propeller Flange and each nut. These Belleville washers must be fitted in pairs as shown in the attached drawing.

Bolts should be torqued to 6 nm (72 inch/lbs) in a standard torque sequence.

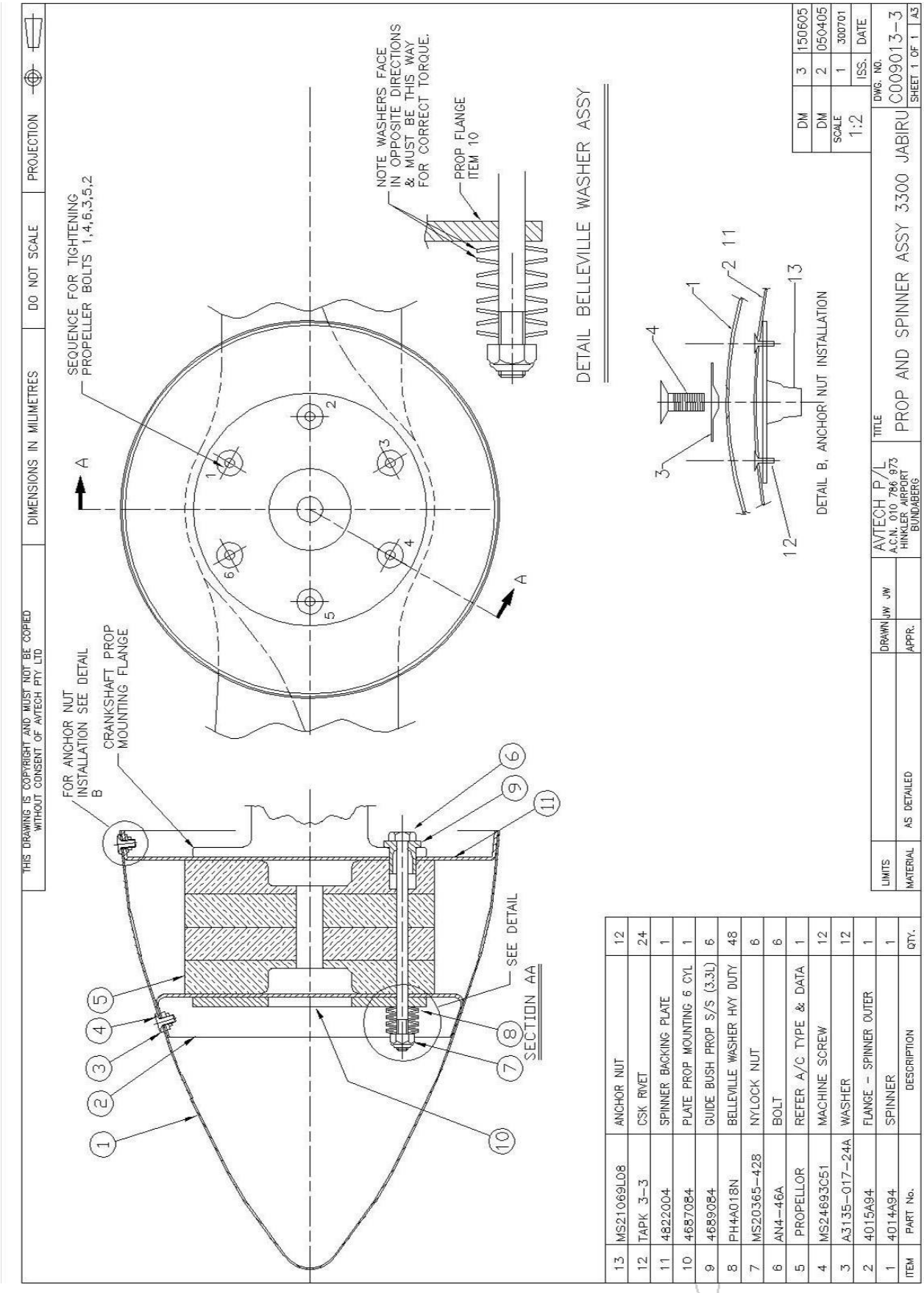

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILIMETRES
DO NOT SCALE
PROJECTION
SEQUENCE FOR TIGHTENING PROPELLER BOLTS 1,4,6,3,5,2
NOTE WASHERS FACE IN OPPOSITE DIRECTIONS & MUST BE THIS WAY FOR CORRECT TORQUE.
PROP FLANGE ITEM 10
DETAIL BELLEVILLE WASHER ASSY
DETAIL B, ANCHOR NUT INSTALLATION
FOR ANCHOR NUT INSTALLATION SEE DETAIL B
CRANKSHAFT PROP MOUNTING FLANGE
SEE DETAIL
SECTION AA
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG
TITLE
PROP AND SPINNER ASSY 3300 JABIRU
DWG. NO. C009013-3
SHEET 1 OF 1 A3
SCALE 1:2
ISS. DATE
3 150605
2 050405
1 300701
DM
DRAWN JW JW
APPR.
LIMITS
MATERIAL AS DETAILED
13 MS21069L08 ANCHOR NUT 12
12 TAPK 3-3 CSK RIVET 24
11 4822004 SPINNER BACKING PLATE 1
10 4687084 PLATE PROP MOUNTING 6 CYL 1
9 4689084 GUIDE BUSH PROP S/S (3.3L) 6
8 PH4A018N BELLEVILLE WASHER HVY DUTY 48
7 MS20365-428 NYLOCK NUT 6
6 AN4-46A BOLT 6
5 PROPELLOR REFER A/C TYPE & DATA 1
4 MS24693C51 MACHINE SCREW 12
3 A3135-017-24A WASHER 12
2 4015A94 FLANGE - SPINNER OUTER 1
1 4014A94 SPINNER 1
ITEM PART No. DESCRIPTION QTY.

Figure 62. Propeller Installation

IMPORTANT

The Spinner is an important and integral part of the propeller Assembly. It is essential to ensure adequate engine cooling. The aircraft must not be flown with the Spinner removed.

21.5 TO REMOVE EXISTING PROPELLER

1. Remove Machine Screws and Tinnerman Washers from Spinner.

2. Remove Spinner.

3. Unbolt Propeller Bolts - 6 off.

4. Remove Bolts, Spinner Flange , Aluminium Propeller Flange, Belleville Washers and Propeller.

21.6 TO ASSEMBLE AND REPLACE PROPELLER ASSEMBLY

1. Ensure that Propeller drive bushes – 6 off, are in place in the Crankshaft Propeller Flange. Fit the rear spinner backing plate to the flange.

2. Fit propeller to flange. Ensure that the drive pins are snug fit in the propeller. Loose pins can cause propeller fretting and engine damage.

3. Fit Propeller Bolts - 6 off.

4. Fit front spinner backing plate to front of propeller. The fit Aluminium Propeller Flange, Belleville Washers - 48 off: (8 per Bolt: assembled in pairs as shown)

5. Progressively tighten bolts ensuring equal distribution of load and in a normal criss-cross torque sequence.

6. Using Torque Wrench, tighten Bolts to 6ft.lbs (72 inch.lbs).

7. Check tracking of Propeller by locating a fixed object on a flat floor so that it just clears the Propeller tips when rotating the Propeller by hand. Check that each blade clears the object by the same amount. If the Propeller is outside the approved tolerance, refer to JABIRU Aircraft Pty Ltd or a JABIRU Approved Service Centre.

   Maximum Tracking Error Tolerance is +/- 2mm.

8. Locate Spinner on Spinner Flange and fix with Machine Screws through tinnerman Washers.

9. Check Spinner for balance by locating a fixed object on a flat floor to just clear the lower edge of the front dome of the Spinner. Rotate the propeller by hand and check that the Spinner runs true.

10. Correct any imbalance by loosening and retightening Machine Screws.

21.7 SERVICING AND REPAIRS

Any service or repair must take account of the risk of subsequent Propeller failure. Therefore repairs are limited to the filling of small nicks in the Propeller. Maximum size of nicks approved for repair is:

- Those in Leading Edge: 4mm deep x 20mm long
- Those across the drive Face (flat sides) : 2mm deep x 6mm diameter or scratches not more than 0.5mm deep.

Repairs must also take account of the changes to balance of the Propeller and therefore the Propeller should be removed in accordance with the procedure described above. It must be checked for balance (see Paragraph 8) prior to refitting (see Paragraph 6), checked for tracking after reassembly (see Paragraph 6.4) and the Spinner checked for balance after reassembly (see Paragraph 6.7).

Only nicks within the size tolerances described above may be repaired. All propellers with cracks or splits (or any delamination of the composite sheath in the case of sheathed Propellers) must be either Rejected as unserviceable or returned to JABIRU Aircraft Pty Ltd or our local approved agent for assessment and possible repair.

In composite leading edges, nicks of a size described above may be repaired by filling with epoxy resin and Fibreflock using the procedure outlined below (Propeller Repair Kit is available from JABIRU as Part No. PP0049N):

1. Remove Propeller as per Paragraph 5.

2. Sand nick with abrasive paper to remove any fractured particles.

3. Mix resin carefully and thoroughly (equal parts resin and hardener) and thicken with Fibreflock to form a paste.

4. Apply paste to sanded nick and allow to cure in low moisture environment for 24 hours.

5. Lightly and carefully sand excess cured resin to a smooth surface matching exactly the previous aerofoil.

6. Refurbish with clear Epoxy paint (JABIRU Part No. PP0069N).

7. Rebalance Propeller (see Paragraph 8).

8. Reassemble and replace Propeller and Spinner (see Paragraph 6).

9. Check Propeller tracking and Spinner balance (see Paragraph 6).

10. Damaged urethane leading edges should be referred to Jabiru Aircraft Pty Ltd for repair.

21.8 PROPELLER BALANCING PROCEDURE

Propeller balance should be checked by locating a 16mm tube to firmly fit the centre mounting hole of the Propeller and balancing on "knife edges".

Tolerances:

- Imbalance shall not exceed the following limit whatever the position of the Propeller in the plane of rotation: 750 mm-gms (approximately 1 gm at the tip).

The balance may only be corrected by the application of epoxy paint. Any other method of securing balance is PROHIBITED.

Propellers outside these limits should be rejected as unserviceable or returned to JABIRU for assessment and possible repair.

22 APPENDIX V – AIRWORTHINESS LIMITATIONS

22.1 GENERAL

This section is approved and sets forth each mandatory replacement time, structural inspection interval and related structural inspection procedures established for the J230-C aircraft.

22.2 INTERIOR FLAME RETARDANT MAINTENANCE LIMITATIONS

Most materials used in the interior upholstery of the J230-C have been treated with a flame retardant to meet the flammability requirements of LSA. This treatment must be renewed after an article has been washed 5 times. Section 4.5.1, UPHOLSTERY CLEANING – FLAME RETARDANT gives details.

22.3 COMPOSITE INSPECTION & MAINTENANCE

As the J230-C's primary structure is all Fibreglass-Epoxy composite, a degree of specialist training is required to properly carry out inspections & maintenance of the structure. This may take the form of an Airworthiness Authority approved Composites Licence or a Jabiru Approved Certification. Jabiru Aircraft offers training & certification for people wishing to gain Jabiru approval to inspect & maintain J230-C structures.

Note that this does not include repairs. Repairs of structural parts must be referred to Jabiru Aircraft.

22.3.1 EXTERNAL PAINT / FINISHING LIMITATIONS

The J230-C is manufactured of a Fibreglass-Epoxy composite which can be weakened by extreme heat. Because of this, the outer finish is subject to the following limitations:

- Overall paint colour must be white.
- Registration markings under the wings must be produced in an outline text style with line width in the range 18 – 22mm. Markings may be any colour which meets visibility requirements, including black.
- Registration markings on vertical surfaces may be produced in a bold text style and may be any colour which meets visibility requirements, including black. Lines used in the registration markings may not be more than 22mm wide.
- Other markings on vertical surfaces, including pinstripes, model identification markings etc may be applied, but are limited to lighter colours over small areas.
- Markings of any kind on the upper faces the aircraft (such as the top surfaces of wings, fuselage and horizontal stabiliser) are not permitted.

22.4 CONTROL SURFACE BALANCING

The J230-C primary control surfaces are balanced during construction. In service there should be no reason to rebalance the controls. Balance checks of the controls are only required after repair or refinishing or at the 5000-hourly major airframe inspection.

Table 19. Control Surface Balancing Limits

Control	Hinge Moment Limits	Weight Limits	Manual Section
Rudder	56300g.mm +/- 4000g.mm	2200g +/- 100g	10.4 RUDDER BALANCE
Aileron	94000g.mm +/- 4000g.mm	1150g +/- 100g	7.4.3 AILERON BALANCING
Elevator	323300g.mm +/- 4000g.mm	5000g +/- 100g	9.3.2 ELEVATOR BALANCING

22.4.1.1 CABLES

Cables must be inspected as detailed in 3.6.3.2 CONTROL CABLE INSPECTIONS.

Table 20. Mandatory Inspection Times

Description	Part No.	Interval (Hours)
Rudder Cable	PC01714	1000
Elevator Cable	PC01814	1000
Aileron Cable (2)	PC01614	1000

22.4.2 MANDATORY REPLACEMENT

The following components MUST be replaced at the intervals described hereunder.

Table 21. Mandatory Replacement Times

Description	Part No.	Interval (Hours)
Rudder Cable	PC01714	10 000
Elevator Cable	PC01814	10 000
Aileron Cable (2)	PC01614	10 000